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Project Ranking II

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constraints options for group decision making. The current version of the system is an organized, structured way of making decisions which enhances the identification and subsequent refinement of criteria considered, and provides a concise, highly credible format for presentation and justification of decisions.

PREFACE

This program was conducted by the Department of Industrial Engineering, Auburn University, under Contract F08635-84-K-0268 with the Air Force Armament Laboratory, Eglin Air Force Base, Florida 32542-5000. Nolan E. Taconi from the Programs Branch (XPB), managed the program for the Armament Laboratory. The program was conducted during the period from July 1984 to March 1986.

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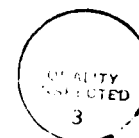


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SUMMARY

This paper describes the methodology developed for a defense department laboratory for project selection and the results of use of the computerized ranking procedure for other complex managerial decisions. In addition to project selection, the system is feasible and instructive in personnel selection, comparison of management strategies, purchasing decisions and merit-based distribution awards. The massive input required by many existing systems is not necessary for this absolute deviation ranking system. Up to 20 attributes and 200 projects can be compared. Measures of consistency and reliability are proposed for estimating the validity of the final weights considering missing values. Preliminary experiments and actual use of the system provide empirical validation and show the results are satisfactory. Further research is underway for the refinement of the system. The impact on reliability of the number of items compared, the comparison scale employed and the number of missing observations provide fertile fields for future work. Extensions of the basic and additive individualized multicriteria models provide for voting, hierarchy and constraints options for group decision making. The current version of the system is an organized, structured way of making decisions which enhances the identification and subsequent refinement of criteria considered, and provides a concise, highly credible format for presentation and justification of decisions.

SECTION I

INTRODUCTION

Many organizations and individuals experience difficulties when considering which projects to give their support. Other complex managerial decisions creating problems include, for example, 1) developing policies for selection of personnel incorporating nondiscriminatory and affirmative action procedures; 2) comparison of management strategies such as running a university on the semester or quarter system; 3) purchase of equipment like compatible, user-friendly computer hardware and software; and 4) distribution of awards, funding, promotions and/or tenure based on merit. Crucial to the managerial decision making process is the ability to communicate decisions to subordinates and superiors. What is needed is an organized, structured way of making decisions which enhances the identification and subsequent refinement of criteria considered, and provides a concise, highly credible format for presentation and justification of decisions.

The task addressed in recent research by the authors was to extend existing methodologies in the design and implementation of a simple but effective computerized ranking procedure for a defense department laboratory. The immediate goal was to provide a documented procedure for selection of projects to be funded. Ongoing research includes further refinements and training of personnel in the use of the system. Other research in progress

by the authors involves the application of the ranking system to the four areas listed above and a modification of the program to allow implementation on personal computers.

SECTION II

DISCUSSION OF EXISTING RANKING METHODS

Numerous efforts have been made to provide a workable methodology for project selection for the defense department, but past efforts have failed [1]. Further attempts to develop utility type models [2] have met only limited success because consistency must be assumed and the process of using the models is very time consuming. An extensive literature survey was made in earlier work by the investigator [3].

1. THE VON NEUMANN-MORGENSTERN AXIOMS

The basis for most modern utility research is Theory of Games and Economic Behavior [4] in which the use of expected utility hypothesis is explained. This approach is based on the idea that a utility can be assigned to each outcome, developed in the 1940's by von Neumann and Morgenstern. Since they are basic to all decision theory, the axioms and notation are included here.

a. Notation

1. $x = y$ indicates that the decision maker is indifferent between the outcomes x and y .
2. $x > y$ indicates that the decision maker prefers the outcome x to the outcome y .

3. $x < y$ indicates that the decision maker prefers the outcome y to the outcome x .

b. The Axioms

A.1. For two consequences x and y , one and only one of the following relations holds:

(a) $x = y$,

(b) $x > y$,

(c) $x < y$.

This axiom provides for comparability of consequences.

A.2. If $x > y$ and $y > z$, then $x > z$. This axiom establishes transitivity.

B.1. $x < y$ implies $x < px + (1-p)y$, where p is the probability of consequence x ($0 < p < 1$). This means that if y is preferred to x , then the decision maker will prefer a lottery between x and y to the certain outcome x as long as the probability of receiving y in the lottery exceeds zero.

B.2. $x > y$ implies $x > px + (1-p)y$. This is the converse of axiom B.1.

B.3. $x < z < y$ implies: There is a p ($0 < p < 1$) such that the decision maker has the following preference: $px + (1-p)y < z$. This axiom establishes the commensurability of the consequences. That is, no matter how superior outcome y is perceived to be with respect to z , there is a sufficiently large probability p such that the certain outcome z is preferred to the lottery over x and y .

B.4. $x > z > y$ implies: There is a p ($0 < p < 1$) such that $px + (1-p)y > z$. This is the converse of axiom B.3.

C.1. $px + (1-p)y = (1-p)y + px$. This is the utility theory analog of the mathematics associative law.

C.2. $p(qx + (1-q)y) + (1-p)y = pqx + (1-pq)y$. This is the utility theory analog of the mathematics distributive law, where q is also a probability ($0 < q < 1$).

2. STATISTICAL DECISION THEORY

The next major contribution was made by Savage in 1954 [5] in his The Foundation of Statistics. 'Axioms incorporating subjective expected utility were estimated by the decision maker during the decision making process.

By applying statistical theory to actual problems, Bayesian or statistical decision theory was developed by such men as Schlaifer [6], Raiffa and Schlaifer [7], and Pratt, et al. [8].

The next step was the investigation of specific characteristics of decision problems. Methods to assess utility functions were proposed by Pratt [9], Schlaifer [6], and Novick and Lindley [10]. The assignment of subjective probabilities was suggested by Winkler [11], Edwards [12], Schlaifer [13], and Tversky and Kahneman [14]. Group decision problems were studied by Arrow [15] and Keeney and Kirkwood [16], and the question of multi-attribute preferences was discussed by Fishburn [17,18,19], Pollak [20], Raiffa [21], Keeney [22,23], and Keeney and Raiffa [2].

3. MULTI-ATTRIBUTE UTILITY THEORY

Until now, only one attribute had been considered. A method was developed by Keeney and Raiffa [2] for dealing with more than one. They distinguished between a value function, a multi-attribute preference function where each decision outcome can be measured with certainty for each attribute, and a utility function, a multi-attribute preference function with at least one evaluation uncertainty.

The simplest utility function for n attributes is

$$u(\bar{x}) = \sum_{i=1}^n k_i u_i(x_i), \quad (1)$$

where \bar{x} = n -vector of attribute value, x_1, x_2, \dots, x_n ,

$u(\bar{x})$ = utility of the vector \bar{x} ,

k_i = weighting of attribute x_i , $i=1,2,\dots,n$,

x_i = a value of the attribute x_i ,

$u_i(x_i)$ = marginal utility of x_i .

Fishburn [18,19,24,25,26] noted that the additive utility model for two attributes x and y is applicable if and only if x and y are additive independent. Thus, the paired preference comparison of any two lotteries depends only on these marginal probability distributions. He also extended the two-attribute independence to the general n -attribute case and developed the multilinear utility function later refined by Farquhar [27].

$$\begin{aligned}
u(\bar{x}) = & \sum_{i=1}^n k_i u_i(x_i) + \sum_{i=1}^n \sum_{j>1}^n k_{ij} u_i(x_i) u_j(x_j) \\
& + \sum_{i=1}^n \sum_{j>i}^n \sum_{m>j}^n k_{ijm} u_i(x_i) u_j(x_j) u_m(x_m) + \dots \\
& + k_{123\dots n} u_1(x_1) u_2(x_2) \dots u_n(x_n)
\end{aligned} \tag{2}$$

where the notation is identical to that for (1) except for the additional weighting constants (the k 's) with multiple subscripts.

Another important concept is utility independence. A set of attributes is said to be jointly utility independent if and only if each of the attributes is utility independent of its complement (the remaining attributes). The multilinear utility function is applicable only when the attributes are jointly utility independent.

If the attributes (x_1, x_2, \dots, x_n) are mutually utility independent, then the utility function $u(\bar{x})$ takes the following multiplicative form:

$$ku(\bar{x}) + 1 = \prod_{i=1}^n (k_i u_i(x_i) + 1), \tag{3}$$

where

1. $u(\bar{x})$ is normalized by $u(x_1^0, x_2^0, \dots, x_n^0)$

and $u(x_1^*, x_2^*, \dots, x_n^*) = 1$,

2. $u_i(x_i)$ is a marginal (conventional) utility function on X_i normalized by $u_i(x_i^0) = 0$ and $u_i(x_i^*) = 1$, $i=1,2,\dots,n$,
3. $k_i = u(x_i^*, \bar{x}_i^0)$,
4. k is a scaling constant determined by an iterative procedure.

Keeney [28] shows that when the sum of the n scaling constants (the k_i 's) is equal to one, (3) reduces to the additive model (1).

While the multiplicative model is easy to assess, $(2^n - 2)$ subsets must be verified for mutual utility independence.

Fortunately, this can be simplified by using these equations, proven equivalent by Keeney and Raiffa [2]:

1. Attributes X_1, X_2, \dots, X_n are mutually utility independent.
2. \bar{X}_i is utility independent, $i=1,2,\dots,n$.
3. $(X_i, X_{i+1}, \dots, X_n)$ is utility independent for $i=1,2,\dots,n$ and $(X_1, X_2, \dots, X_{n-1})$ is utility independent.
4. X_i, X_{i+1} is utility independent for $i=1,2,\dots,n-1$, $n \geq 3$.
5. X_1 is utility independent and (X_1, X_i) is preferentially independent for $i=2,3,\dots,n$, $n \geq 3$. This condition can

be generalized to require that any single attribute, not necessarily X , is utility independent.

In these equations, cases 2 through 5 require only n assumptions. In equation 5, the term preferential independence refers to value functions, or trade-offs under certainty. A pair of attributes X_1 and X_2 is preferentially independent of its complement, \bar{X}_{12} , if the conditional preferences over (X_1, X_2) given some value \bar{X}_1 or \bar{X}_2 do not depend on \bar{X}_{12} .

This method has the additional advantage of having been successfully applied, most notably in the summer of 1971 by de Neufville and Keeney [29] in choosing the site for a new airport in Mexico City.

One-way utility independence, developed by Keeney [23], is the decomposition of a two-attribute utility function $u(x,y)$ when only one is utility independent of the other.

If X is utility independent of Y , then

$$u(x,y) = u(x^0, y) + u(x, y^0) \frac{u(x^*, y) - u(x^0, y)}{u(x^*, y^0)}, \quad (4)$$

where $u(x,y)$ is normalized by $u(x^0, y^0) = 0$ and $u(x^*, y^*) = 1$.

An equivalent decomposition was derived by Bell [30] using conditional utility functions.

If X is utility independent of Y , then

$$\begin{aligned} u(x,y) &= u(x^0, y^*) u(y/x^0) + u(x^*, y^0) u(x/y^0) \\ &+ (1 - u(x^*, y^0)) u(y/x^*) u(x/y^0) \\ &- u(x^0, y^*) u(y/x^0) u(x/y^0). \end{aligned} \quad (5)$$

If Y is utility independent of X, then (2) is applicable.

$u(x,y)$ differs from $u(x/y)$ in that $u(x,y)$ is the decision maker's utility for the joint outcomes x and y and $u(x/y)$ is the decision maker's utility for the outcome x, given that the outcome y is received.

Another example with a simple and efficient decomposition and a difficult to verify requisite is interpolation independence, developed by Bell [30]:

"If the conditional utility function $u(x,y)$ may be defined by a relation of the form

$$u(x/y) = \theta(y) u(x/y^*) + (1-\theta(y)) u(x/y^0), \quad (6)$$

then I will say that X is interpolation independent of Y and write $X(II)Y$."

If X and Y are jointly interpolation independent, then

$$\begin{aligned} u(x,y) = & au(x/y^0) + bu(y/x^0) - ku(x/y^0) u(y/x^0) \\ & + (k-a) u(x/y^0) u(y/x^*) + (k-b) u(x/y^*) \\ & u(y/x^0) + (1-k) u(x/y^*) u(y/x^*), \end{aligned} \quad (7)$$

where $a = u(x^*, y^0)$; $b = u(x^0, y^*)$ and k is an independent constant.

4. ANALYTIC HIERARCHY

This method, developed by Saaty [31], relies on reducing systems to pairwise comparisons of components grouped by shared characteristics. These pairs are compared on some scale.

After all values have been entered, the maximum eigenvalue and its associated normalized eigenvector are calculated by computer. This eigenvector represents the best weighting for the factors.

The consistency factor is

$$CI = \text{Consistence Index} = \frac{\lambda_{\max} - n}{n-1}$$

RI = Random Index = determined for n by experiment and reported in Saaty [31] (p. 31),

$$\text{Consistency Ratio} = CI/RI$$

If the consistency is greater than 1.00, then a preference of $a < b < c < a$ may exist. If the consistency is greater than .1 and less than 1.0, then there may be a problem of degree. The decision maker may have said that a is strongly preferred to b, b is strongly preferred to c, and a is strongly preferred to c. In this case, a should be very strongly preferred to c.

5. EVALUATION OF AVAILABLE METHODS

The importance of allowing for multiattributed decision making is elaborated by Winkler [32]. A variety of approaches to developing multidimensional evaluations have been suggested in the literature. The decisions made during project selection and many other ranking processes are such that no ideal answer exists. Fuzzy goal programming and fuzzy multicriteria programming techniques are reviewed by Ignizio [33] and suggested for use in decision making. The subjective nature of decisions such

as project selection lends itself to preference comparisons [34]. These comparisons can be consolidated into a ranked and weighted set of projects using Saaty's Analytic Hierarchy Process [31] or linear and mathematical programming methods [35,36]. Holistic judgements have been used for small sets of comparisons and empirical validation [37] does seem appropriate for determining the credibility of decisions based on personal preferences. Saaty [31] overcomes the consistency difficulty for small problems of fifteen or fewer options, but extensive input is still required. The Saaty procedure calls for a complete matrix of paired comparisons on some scale. This would amount to $n(n-1)/2$ comparisons, or 105 in a case with 15 options. A recent study by Zahedi [38] employed a Saaty-based method of multiple-criterion ranking, but the author's example (p. 103) was a totally consistent matrix which is not realistic in practice. Hannon [39] concurs that the consistent case is trivial since any column of the input matrix is the weight vector for the solution. Experience of the authors [3] has shown that in order to achieve consistency with a large matrix, the scale must be expanded much beyond Saaty's scale. Another study, by O'Grady and Menon [40], uses multiple criteria, but does not provide the flexibility for each user to choose his own set of criteria. Research by the authors shows the selection of such criteria is virtually unrepeatable. A recent article describes a preference weighting scheme using absolute deviations [41]. This article describes how models based on absolute deviations may be used to weight any

number of projects by either individuals, groups, or in hierarchies. However, the particular formulation used in [41] assumes the comparisons are in reference to an ideal. In applications considered by this paper, no ideal is known, so a modified model is needed.

In summary, some pertinent methodological problems remaining are 1) decreasing the amount of input needed for single and multiattribute decision making, 2) allowing the comparison of large numbers of items and 3) providing an estimate of the consistency of the results. These problems are addressed, but not totally solved, by the methodology developed and implemented in this study.

SECTION III

METHODOLOGY

1. SAATY METHOD

The procedure developed by Saaty [31] asks the decision maker to state his preference on some scale, which Saaty recommends be based on divisions of seven or nine. These preferences may be represented in a matrix, A as:

$$A = \begin{matrix} & \begin{matrix} 1 & 2 \dots i \dots j \dots n \end{matrix} \\ \begin{matrix} 1 \\ 2 \\ \vdots \\ i \\ \vdots \\ j \\ \vdots \\ n \end{matrix} & \begin{bmatrix} 1 & a_{12} & a_{1i} & a_{1j} & a_{1n} \\ 1/a_{12} & 1 & & & \\ \vdots & & \ddots & & \\ 1/a_{1i} & & & 1 \dots a_{ij} \dots & \\ \vdots & & & & \ddots \\ 1/a_{ij} & \dots & 1/a_{ij} & \dots & 1 \\ \vdots & & & & \\ 1/a_{1n} & & & & 1 \end{bmatrix} \end{matrix} \quad (8)$$

where a_{ij} represents the degree of preference the decision maker has for project i over project j , and $a_{ji} = 1/a_{ij}$.

Saaty then finds the maximum latent root, λ . In the perfectly consistent case, $\lambda = n$.

If $\lambda = n$, then each preference a_{ij} is exactly consistent and

$$a_{ij} = \frac{w_i}{w_j} \quad (9)$$

Thus, multiplication of the consistent A matrix by the vector $W = [w_1, w_2 \dots w_n]$ of weights gives W , as illustrated below:

$$A W^T = \begin{bmatrix} (1-n) & \frac{w_1}{w_j} & \dots & \frac{w_n}{w_1} \\ \frac{w_2}{w_1} & (1-n) & \dots & \\ \vdots & & & \\ \frac{w_n}{w_1} & & (1-n) & \end{bmatrix} \begin{bmatrix} w_1 \\ w_2 \\ \vdots \\ w_n \end{bmatrix} \quad (10)$$

$$= \begin{bmatrix} w_1 - nw_1 + \frac{w_1}{w_2} (w_2) + \dots + \frac{w_1}{w_n} (w_n) \\ \vdots \\ w_i \dots \\ \frac{w_n}{w_1} (w_n) \dots \dots + w_n - n(w_n) \end{bmatrix} = \begin{bmatrix} w_1 \\ w_2 \\ \vdots \\ w_n \end{bmatrix} = W^T \quad (11)$$

Inconsistencies in preferences stated by the decision maker result in a less than perfect weight vector and increase the difference between λ and n . Saaty is therefore able to measure consistency using $C_s = \frac{\lambda - n}{n-1}$. He further refines the consistency estimate for size using statistics determined from simulations. However, this technique lacks the ability to estimate missing values.

2. ABSOLUTE DEVIATION PROCEDURE

Using an absolute deviation procedure, the model may be formulated using the A matrix as

$$\min \sum_{k=1}^k (\epsilon_k^+ + \epsilon_k^-) = Z \quad (12)$$

$$\text{ST: } w_i - a_{ij} w_j - \epsilon_k^+ + \epsilon_k^- = 0 \quad (13)$$

$$\sum_{i=1}^n w_i = 1 \quad (14)$$

where

for ranking n projects, for each i and j from 1 to n ,

k is the number of comparisons, $n-1 \leq k \leq n(n-1)/2$,

w_i is the weight of project i ,

a_{ij} is the degree of preference for project i over project j for comparison k ,

ϵ_i^+ and ϵ_i^- are the positive and negative errors for comparison k , and

Z is the value of the objective function.

For the perfectly consistent case $Z = \sum_{k=1}^k (\epsilon_k^+ + \epsilon_k^-) = 0$ therefore

$a_{ij} = \frac{w_i}{w_j}$ as before and the w_i for the absolute deviation must be exactly the same as using the normalized eigenvector. Of course, as the inconsistency increases, the w_i obtained by the two methods will not be the same.

A crude measure of consistency may be obtained where there is redundancy by finding $Z/(n-1)$ as illustrated in the following example. Further statistical work is now being conducted by the

author to adjust this consistency for the amount of redundancy and size of n .

3. EXAMPLE OF BASIC ABSOLUTE DEVIATION METHOD

A decision maker must choose among three alternatives. He decides that he can make quality statements about the paired relationships; hence he states he prefers two strongly over one, three strongly over one and three very strongly over two. Using a scale of one to nine, these statements are translated into the quantitative matrix.

$$= \begin{matrix} & \begin{matrix} 1 & 2 & 3 \end{matrix} \\ \begin{matrix} 1 \\ 2 \\ 3 \end{matrix} & \begin{bmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{bmatrix} \end{matrix} = \begin{bmatrix} 1 & 5 & 5 \\ 1/5 & 1 & 7 \\ 1/5 & 1/7 & 1 \end{bmatrix} \quad (15)$$

This matrix is translated into the model given as follows:

$$\text{Min} \quad \begin{matrix} + & - & + & - & + & - \\ \epsilon_1 & +\epsilon_1 & +\epsilon_2 & +\epsilon_2 & +\epsilon_3 & +\epsilon_3 \end{matrix} = Z \quad (16)$$

$$\text{ST:} \quad \begin{matrix} & + & - \\ w_1 - 5w_2 & -\epsilon_1 & +\epsilon_1 \end{matrix} = 0 \quad (17)$$

$$\begin{matrix} & & + & - \\ w_2 - 7w_3 & & -\epsilon_2 & +\epsilon_2 \end{matrix} = 0 \quad (18)$$

$$\begin{matrix} & & & + & - \\ w_1 & - 5w_3 & & -\epsilon_3 & +\epsilon_3 \end{matrix} = 0 \quad (19)$$

$$w_1 + w_2 + w_3 = 1 \quad (20)$$

The solution of this problem is $w_1 = 0.8140$, $w_2 = 0.1630$, $w_3 = 0.0233$, $Z = 0.6977$.

A measure of consistency might be formed by dividing Z by $n-1$, hence a crude measure for this problem would be 0.35. Also note

that the a_{ij} implied by the final solution are $a_{12} = \frac{w_1}{w_2} = \frac{35}{7} = 5$,

$a_{13} = \frac{w_1}{w_3} = \frac{35}{1} = 35$ and, $a_{23} = \frac{w_2}{w_3} = 7$.

This suggests to the decision maker that perhaps he understated the relative importance of project three overall. The decision maker may wish to alter some choices. The procedure indicates a likely place to look for errors and will automatically estimate and insert missing values.

4. EVALUATION OF ABSOLUTE DEVIATION METHODOLOGY

Evaluation of the Saaty and absolute deviation techniques reveals that, for consistent comparisons, the two methods are identical, even when many comparisons are omitted in the absolute deviation technique input. As few as $n-1$ interlinked comparisons will produce results equivalent to the Saaty results for $n(n-1)/2$ comparisons.

If the available comparisons are not linked, erroneous output is produced. For example, if there is a project or projects for which no comparisons are made, the solution will yield a weight of zero for these projects.

Assuming that all alternatives are linked by comparisons, the robustness of the consistency estimate varies directly with the number of redundant comparisons. The redundancies reduce the impact on the validity of the final weight vector of a single very wrong comparison.

The absolute deviation method thus offers the potential of being identical to the Saaty method in the consistent case. It addresses the weakness of the Saaty method, offering a relatively simple solution to the problem of estimating some missing values. An additional advantage of the absolute deviation method is that it can readily be programmed using standard L.P. software packages.

In order to incorporate the strengths of the absolute deviation technique into a managerial decision-making program under development, the basic absolute deviation model has been expanded to provide for multiple criteria, committee and/or hierarchical decision making and to allow constraints.

5. ADDITIVE MODEL

The additive model may be easily employed by first determining the attributes relating to given decision alternatives. The weights of the attributes may be obtained by use of the basic model. In practice an independent check of one or more of the weights by another method, such as trade-offs, may be desirable. The investigator must next use the basic model on the alternatives for each attribute and combine the resulting project weight vectors into a matrix, F , which is then multiplied by the attribute weight vector, W , to give the final weight vector, W_f .

$$FW = W_f \quad (21)$$

6. VOTING MODEL

The simple voting model may proceed by assuming each of the m members is equal and, for each member, scaling that member's sum of weights for the n projects to be $1/m$. Thus,

$$\sum_{i=1}^n w_i = 1/m \quad (22)$$

where w_i is the member's weight for project i .

The group vote for project i will be the sum of the members' votes for project i . An alternative, through rarely feasible in practice, would be for each member to weigh the other voting members. The sum of project weights for member j would then be scaled to sum to w_j instead of $1/m$. This particular version might also be applicable to elections.

A voting model, which might produce better results when there are small groups of voters with only a limited number of choices, is available (but not yet programmed or tested).

After each of the V voters has ranked the same n projects and is satisfied with his individually produced weights w_{1v} , $w_{2v} \dots w_{nv}$, the K_v comparisons, a_{ijv} , of each voter, v , are combined to produce final weights $w_1, w_2 \dots w_n$ using the model:

$$\min \sum_{v=1}^V \sum_{k_v=1}^{K_v} (\epsilon_{vk_v}^+ + \epsilon_{vk_v}^-) = Z \quad (23)$$

$$\text{ST: } w_{iv} - a_{ijv} w_{jv} - \epsilon_{vk_v}^+ + \epsilon_{vk_v}^- = 0 \quad (24)$$

for $v=1 \dots V$; $k_v = 1 \dots K_v$; $1 \leq i \leq n$; $1 \leq j \leq n$;

$$n-1 \leq K_v \leq n(n-1)/2$$

$$\left(\sum_{i=1}^n \sum_{v=1}^V w_{iv} \right) - w_i = 0 \quad (25)$$

$$\sum_{i=1}^n w_i = 1 \quad (26)$$

This a priori optimal model might be more desirable than the simpler additive voting model where each person's vote has equal weight.

7. HIERARCHY MODEL

Finally, the most difficult problem arises in hierarchies, where it is desirable to weight or rank tasks at lower levels. For example, a division may have two departments, as in Figure 1.

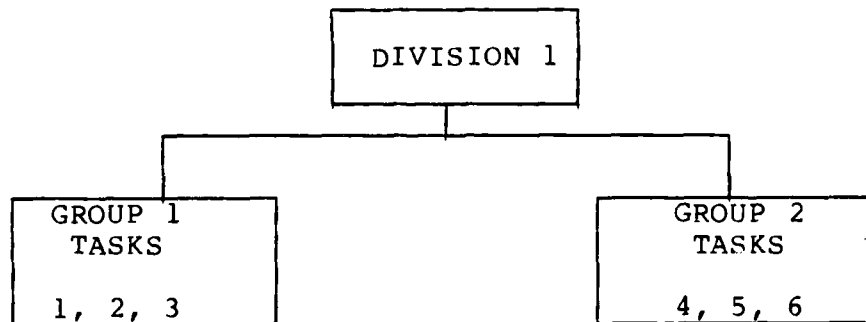


Figure 1. Hierarchical Organization.

A =

		1	2	3		4	5	6
1						*		
1								*
2			A ₁				A ₂	
3						*		
4	*			*				
5			A ₃				A ₄	
6	*							

Figure 2. Combined Preference Matrix. Submatrices A₁ and A₄ are Derived from Group 1 and 2 Approved Weights. Division Chief Fills in Some Connecting Comparisons (*'S) in Shaded Submatrices.

Groups 1 and 2 can then prioritize within their respective organizations. The division leader may accept their ranking, discuss individual comparisons and reweight, or substitute his own order (he is in charge). After a satisfactory set of weights is obtained within each group, the division head must compare one or more ($m - 1$ or more in general) tasks from each group. That is, A₂ and A₃ in Figure 2 are partially or completely filled in. Optionally, additional projects may be added by the chief. Such an example is found in the User Guide, Appendix A. This problem is again solvable by our procedure.

8. CONSTRAINTS MODEL

Resource allocations may be made using the final weights from any model. If budget and manpower are to be considered as separate constraints, the model is as follows:

$$\text{Max } \sum_{i=1}^n w_i X_i \quad (27)$$

$$\text{ST: } \sum_{i=1}^n b_i X_i \leq B \quad (28)$$

$$\sum_{i=1}^n m_i X_i \leq M \quad (29)$$

where w_i is the weight of project i , for each of the n projects,
 X_i must equal 0 or 1,
 b_i is the budget estimate for project i ,
 B is the available budget,
 m_i is the manpower required for project i , and
 M is the available manpower.

In the above model one can easily add further breakdowns, such as 6.1, 6.2, or 6.3 program budgets, or skill level and grade breakouts for manpower. Other restrictions such as forced entry of micro-managed projects or assuring a minimum level of activity for each organization may be conveniently entered.

9. COMPUTATIONAL METHODS

The models shown have been programmed for the "VAX" and "IBM" computers. The basic code used was "LINDO" with a FORTRAN matrix generator and a report writer developed for interactive input and output.

Tests of these models indicate that a full matrix of about 55 projects can be weighted, and that 300 projects can be weighted if a minimally dense matrix is input.

SECTION IV

RESULTS

The decision-making results from use of the models implemented as formulated above are illustrated by the following examples and summaries of output.

1. SAATY VERSUS ABSOLUTE DEVIATION

First, the Saaty and absolute deviation techniques are compared to establish the feasibility of analysis for large numbers of projects, n , and when increasing numbers of comparisons, k , are missing. The runs reported are illustrative, not a precise quantification of the relationship between number of missing values and consistency.

Empirical observation of trends in a realistic example of good but not perfect consistency show that the objective function, Z , decreases with the number of comparisons, k . (Omitting a comparison is equivalent to omitting a constraint.) As k varies from its maximum $n(n-1)/2$ to its minimum, $n-1$, Z approaches zero, but the final weights stay the same. To further substantiate this observation, two input matrices from Saaty [31] were tested as input to the absolute deviation model. Results are summarized in Tables 1, 2 and 3. Comparison of Saaty and absolute deviation techniques show the increase in consistency (decrease in Z) with fewer comparisons and the effect of decreasing consistency on the weight vector. More details are found in Appendix B.

TABLE 1

TEST EXAMPLE

IMPACT ON WEIGHT VECTOR AND OBJECTIVE FUNCTION OF
DECREASING NUMBERS OF COMPARISONS WHEN
FULL MATRIX SHOWED GOOD CONSISTENCY

n = 5		Absolute Deviation					
Comparisons, k	Saaty [3]	10	9	8	7	6	5
Weights w_1	0.045	0.045455	0.061	0.061	0.061	0.061	0.061
w_2	0.218	0.204545	0.183	0.183	0.183	0.183	0.183
w_3	0.534	0.545455	0.550	0.550	0.550	0.550	0.550
w_4	0.073	0.068182	0.069	0.069	0.069	0.069	0.069
w_5	0.130	0.136364	0.137	0.137	0.137	0.137	0.137
Objective Z	-	0.318181	0.214	0.191	0.191	0.137	0.092

TABLE 2

SAATY SCHOOL EXAMPLE

IMPACT ON WEIGHT VECTOR AND OBJECTIVE
FUNCTION OF DECREASING NUMBERS OF
COMPARISONS WHEN FULL MATRIX
SHOWED MODERATE CONSISTENCY

n = 6		Saaty [30]	Absolute Deviation		
Comparisons, k		15	15	10	5
Weights	w_1	0.33	0.302	0.366	0.348
	w_2	0.05	0.050	0.020	0.070
	w_3	0.03	0.043	0.052	0.050
	w_4	0.09	0.050	0.073	0.070
	w_5	0.23	0.252	0.122	0.119
	w_6	0.27	0.302	0.366	0.348
Objective Z		-	1.1799	0.610	0.0

TABLE 3

SAATY SCHOOL EXAMPLE

IMPACT ON WEIGHT VECTOR AND OBJECTIVE FUNCTION
OF DECREASING NUMBERS OF COMPARISONS WHEN
FULL MATRIX SHOWED POOR CONSISTENCY

n = 6		Saaty [30]	Absolute Deviation		
Comparisons, k		15	15	10	5
Weights	w_1	0.32	0.511	0.504	0.316
	w_2	0.14	0.128	0.126	0.079
	w_3	0.03	0.021	0.034	0.105
	w_4	0.13	0.042	0.042	0.316
	w_5	0.24	0.170	0.168	0.106
	w_6	0.14	0.128	0.126	0.079
Objective Z		-	1.8723	1.4034	0.0

These preliminary results illustrated the feasibility of the absolute deviation procedure for giving close estimates for the weight vector even when many comparisons are omitted if the comparisons input are consistent. The patterns observed in the relationship between the objective function, Z and the numbers of missing observations spurred additional study.

2. ADDITIVE MODEL RESULTS

An additive model was used to provide (optional) multi-criteria capabilities. The system was used in an actual hiring decision process where 7 applicants were ranked on 7 criteria. Thus an attribute matrix, A , was generated, and for each attribute, the applicants were rated with respect to that attribute. This produced 7 more matrices, $B - H$. To test the impact of missing values, for each matrix $A - H$, and for $r=0,3,5,6,8,10$, and 15, comparisons were randomly selected to be omitted. Three different random selections of r comparisons were made for each matrix and each r except 0 and 15. Final weights are listed in Table 4 according to number of comparisons. (Only some of the weights obtained displayed.) Since $n=7$, the number of comparisons possible ranges from 21 to 6.

TABLE 4

PERSONNEL EXAMPLE USING ADDITIVE MODEL WITH 7 CRITERIA
AND 7 APPLICANTS IMPACT ON FINAL WEIGHT VECTOR
OF DECREASING NUMBERS OF COMPARISONS

n=7		Absolute Deviation		
Comparisons, k		21	15	10
Weights	w_1	0.081	0.086	0.074
	w_2	0.029	0.029	0.017
	w_3	0.243	0.246	0.266
	w_4	0.111	0.100	0.107
	w_5	0.071	0.074	0.073
	w_6	0.212	0.205	0.190
	w_7	0.253	0.256	0.272

This demonstrates that in a real-life decision making scenario, the absolute deviation technique can produce a believable result even when many comparisons are omitted. The decision maker who generated the set of final weights from 21 comparisons in each matrix was complemented by the rest of the search committee for the impressively thorough nature of his decision report. They agreed with the results of his ranking.

3. CONSISTENCY AND RELIABILITY

The additive model matrices generated in the Personnel Example were considered individually and compared to provide further data on the relationship of the number of projects compared, n , with the number of comparisons, k , (ranging from $M = (n)(n-1)/2$ to $(n-1)$) and the objective function, Z , for matrices A - H of differing consistencies. Figure 1 shows the average value of Z for each number of comparisons for $n=7$. If the observations from each matrix A - H were fit to a straight line, then for a matrix, say A, the slope m_A of line L_A is the ratio of the change in objective function ΔZ to the change in number of observations, Δk . If it is assumed that this slope is constant for all k , it provides a measure of reliability based on the objective function and number of comparisons.

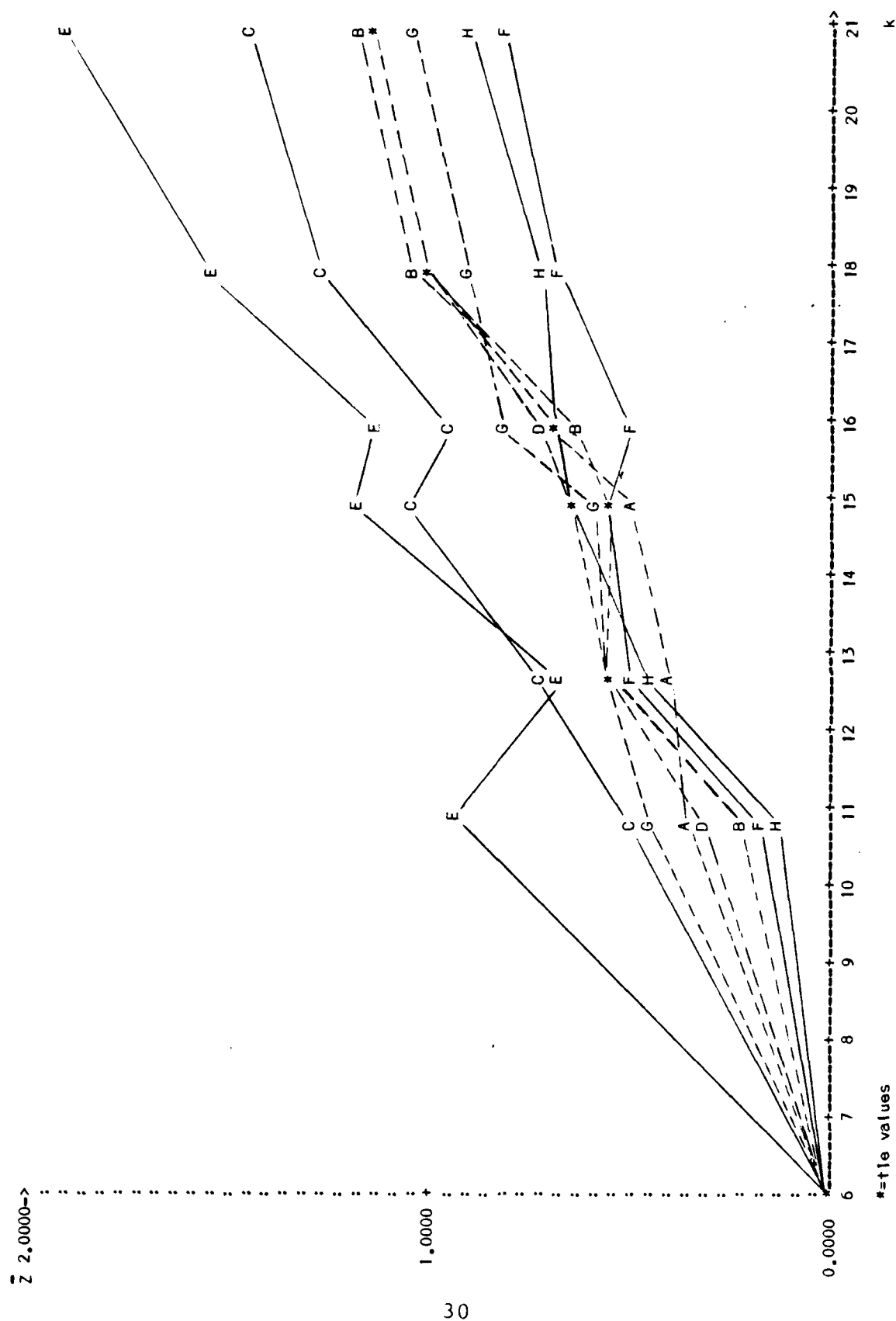


Figure 3. Plot of Average Objective Function, \bar{Z} vs Number of Comparisons, k , for Matrices A-H.

Since the scale, s , (range of input values) influences the maximum inconsistency, a reliability index based on Z/k should be normalized with respect to scale. If

$$Z_M = (S-1) \frac{(n-1)}{2} \quad (30)$$

is taken as an estimate of the worst error, Z_M , for a matrix of size n generated with scale s , then a possible reliability index RI , is

$$RI = \frac{2Z}{k(S-1)(n-1)} \quad (31)$$

statistical evaluation of the above result and investigation of the robustness of the assumptions is ongoing. Future experiments should investigate the linearity of Z/k , the impact of n , and the effect of s on the proposed reliability index.

4. EXAMPLES

Further examples of the use of the Basic Model 1, Additive Model 2, Voting Model 3, Hierarchy Model 4, and the Constraints Model 5, are found in Appendix A, the User Manual. A composite example incorporating all the models is reported in Section VI of the User Manual, and Appendix B, Additional Examples, contains detailed input and output information on other applications of the system tested. Appendix C contains a copy of the commented computer program implementing the methodology described herein.

SECTION V

CONCLUSIONS

1. SUMMARY OF RESULTS

A feasible and instructive method has been developed for ranking projects or making other decisions such as personnel selection, policy making, presentation and allocation of merit awards. The structured methodology now implemented on "VAX" and "IBM" computers provides insight into the decision making process for the decision maker and everyone to be apprised of the decisions. In addition to facilitating communication, it establishes credibility and is a powerful tool in investigation of the processes being considered, and in negotiations.

The currently implemented program provides a mechanism for selection among up to 200 projects based on their overall worth or on up to 20 different criteria. Voluminous input required by other systems is reduced by allowing many preference comparisons to be omitted. Consistency increases when fewer observations are input since the user is not forced to guess when uncertain of some comparisons. The reliability of the final weight vector increases with the consistency of the input and with the percentage of possible comparisons actually input. Further investigation is proposed regarding the effect on the consistency and reliability indices suggested of the number of items compared, the comparison scale employed, and the number of missing observations. More applications of the system are

planned and simulations could be designed to table the consistency and reliability indices. Future enhancements to the computerized system will be based on feedback from the defense department laboratory currently using the system.

2. RECOMMENDATIONS

A useful avenue for further research would be to more fully implement the existing research and analytic programs. Such a system should include (1) Streamlined programs (2) Data input (3) Storage (4) Matrix Generation (5) Merging (6) Error Detection (7) Training (8) Use of other data bases and (9) Stand-alone Programs for the Z-100.

The first step would be to collect the opinions of the users to make the basic programs more responsive to needs of the various users. One important task would be to develop a stand-alone version of the program that could be executed at the user's desk or taken to another location. Methodology might be altered so that, by using least squares procedures, preference values in the comparison matrix could be estimated prior to going into the weighting process. Other features of new research would be to improve the procedure for determining which comparisons are contributing heavily to the inconsistency of the result. Also, sensitivity analysis would be made available to determine the impact of errors on the final outcome. The effect of scale would be investigated further, and the hierarchy model refined.

More specifically, a follow-on study would entail development of an integrated MIS system based on the Z-100 as a

stand-alone computer. Where the Z-100 size limitations constrain the model, an interface with the "VAX" computer and currently existing programs could be provided. Data-base information could also be retrievable from the "CYBER." The Basic, Additive and simple Voting models and a tailored version of the Hierarchy model would be available using the Z-100 as a stand-alone computer. Accessing of the models would be aided by an interactive front-end program on the Z-100 which could also direct any links with the "VAX" or "CYBER" needed to access data-base records of projects, run a sensitivity analysis, provide optional access to stored files, do extremely large examples, use an improved voting model such as the one described below, or execute an enhanced Constraints model. Development of the interface would be enhanced by working closely with potential users, receiving the assistance of one designated person at the laboratory, and helping potential users to write personalized operating instructions.

Features of the Z-100 based integrated Management Information System would, for example, allow the decision maker to

- * enter data and execute tailored versions of the Basic, Additive, Voting and Hierarchy models,
- * experiment with several runs of various models while remaining at his own work station and protecting his privacy.
- * avoid any (highly unlikely) breaches of security due to unauthorized access of the "VAX,"

- * employ interfaces with the the "VAX" and "CYBER" for
 - optional file storage and access to group member files,
 - executing runs with large numbers of comparisons,
 - running a sensitivity analysis,
 - executing a newly proposed Voting model,
 - executing the Constraints model, and
 - interfacing with task description and accounting records.

The implementation of the system on the Z-100 could involve breaking the existing software into modules and reducing the number of possible comparisons entered at one time. A new model for estimating ranks and weights could free the Z-100 portion of the system from the licensed software package, "LINDO", thus enhancing portability. The new model estimates weights as

$$\hat{W} = (B^T B)^{-1} B^T E \quad (32)$$

where \hat{W} is the estimated weights vector and the B matrix is derived from the input comparisons matrix A. Matrix B has one row for each of the C non-zero comparisons in the matrix, A. For each comparison a_{ij} , B has a row, c, with only 2 nonzero elements:

$$b_{ci} = -1 \quad (33)$$

and

$$b_{cj} = a_{ij} \quad (34)$$

Row C + 1 of matrix B is all ones.

This least squares procedure provides a reasonable estimate of ranks and weights, but in the rare event that the matrix B is singular, the user would have to use the "VAX" system. Singularity is not a problem with "LINDO." The actual number of comparisons which could be accommodated on the Z-100 would be determined during further studies.

Further study would thus provide additional advantages such as:

- facilitating user access by implementing portions of the system on the Z-100.

- linking with task description and accounting databases to provide the decision maker ready access to such data as the description of a task and its projected cost over the next 5 years, money spent, and money remaining unconstrained,

- improving the Voting model to provide a better estimate when small groups are voting on a small number of tasks by testing and refining a new model. After each of the V voters ranked the same n projects and was satisfied with his individually produced weights $w_{1v}, w_{2v} \dots w_{nv}$, the K_v comparisons, a_{ijv} , of each voter, v, would be combined to produce final weights $w_1, w_2 \dots w_n$ perhaps using the model:

$$\min \sum_{v=1}^V \sum_{k_v=1}^{K_v} (\epsilon_{vk_v}^+ + \epsilon_{vk_v}^-) = Z \quad (35)$$

$$ST: w_{iv} - a_{ijv} w_{jv} - \epsilon_{vk_v}^+ + \epsilon_{vk_v}^- = 0 \quad (36)$$

for $v=1 \dots V$; $k_v=1 \dots K_v$; $1 \leq i \leq n$; $1 \leq j \leq n$;

$$n-1 \leq K_v \leq n \quad (n-1)/2$$

$$\left(\sum_{i=1}^n \sum_{v=1}^V w_{iv} \right) - q_i = 0 \quad (37)$$

$$\sum_{i=1}^n w_i = 1 \quad (38)$$

An important consideration in the system would be to determine what programs should be ranked. Any set of programs may be weighted, but for reasons of efficiency and time, certain programs may not be considered. For example, all 6.2 work ought to be weighted, but the time involved would be greater. It might be better to combine work units into work packages for ranking at the division and lab levels. Further, 6.2 lab funded programs may be desirable to breakout. Still further, micromanaged, mortgaged, and very important programs may be removed. The remaining set would be more manageable and would include only those programs about which there is some doubt about funding. The work here would develop a screening method from interviews with key personnel to insure that only those requiring a decision are ranked.

A further consideration would be to implement at higher levels of the organization existing programs which reduce the

effort involved in ranking. The members might thus be able to rank the laboratory programs using as few as three comparisons even though such results would not be as strong as those produced from more comparisons.

Future efforts could include designing a system for coordinating the rank program with the existing financial database and storing the information generated by the ranking process. The input and output formats of the system would be specified. Personnel in DLX would be asked to participate in this specification by communicating their needs and preferences. Methods for implementing the system would be investigated. DLX would provide instruction with regard to the current financial database and how it is accessed and updated. If the financial database could easily be automatically linked to the ranking programs, this would be done. Otherwise, DLX would provide a manual link or the link would be constructed in a future effort. If improvements in the current data base and procedures were needed, recommendations would be submitted. A suitable language for writing the system program would be determined. The program would be written and documented, and trial runs would be made using DLX personnel input.

The total thrust effort would be summarized after the final selections were made to determine if the lab program is emphasizing the currently identified needs for certain capabilities.

Verification and validation should be done before any system could be viewed as complete. The entire system would be verified by going over all the options in the training sessions and determining whether the program produces the anticipated results and how closely those results conform to the overall feelings of the user. This step would be time-consuming, but existing test examples indicate that a verifiable program could be produced with effort.

The validation of the programs would be more difficult. By validation it is meant that the high ranked projects do tend to be the high payoff projects in the end. The present program provides only for setting up validation procedures using the audit trail allowed by the system. The reason for this is that most programs to be ranked go for 2 or more years, but this effort would be completed in less than 2 years. The procedures necessary for completion of the validation would be included in the final report.

After the system was programmed and all the procedures including optimization were worked out to the satisfaction of key personnel, the users of the system would be trained. For this purpose, one person in DLX should be designated to learn the operation of the programs thoroughly. Also, the investigators would help users write operating instructions and train all users the laboratory designated and made available, not to exceed one from each branch, two from each division, and six others from the laboratory.

In addition, the system program would be maintained by KR. Further efforts would include the training of KR personnel on the program in addition to providing the instructions and the documented program.

Investigations would be carried out concerning the possibility of making: 1. cut or delay decisions, 2. group decisions, 3. extending this methodology to other laboratories, and 4. determining manpower requirements using top down - bottom up planning procedures.

If budget restraints force a program to be discontinued during the current or coming year, the question arises as to whether the program effort should be stopped or simply delayed. In order to solve this problem by a model, rankings for FY + 2 are necessary. The investigation of this problem would consider the feasibility of making realistic rankings 2 or more years ahead. If such rankings were feasible, the effort and cost involved would still need to be studied to determine if the potential value is great enough to justify the cost.

APPENDIX A

USER MANUAL: RANKING SYSTEM FOR PROJECT SELECTION

1. DESCRIPTION

Rank and weight projects on an individual basis with regard to overall worth or selected attributes. Vote on project ranks as an equal group; or, as part of the hierarchy, retrieve subordinates' rankings, modify and/or supplement them. Maximize the number of projects funded based on their individual costs, final weights, and overall budget. Provide an audit trail of the decision making process, if desired.

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January, 1986

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a. OVERVIEW

Goal - Provide a decision support system to improve the project selection mechanism and provide an optional audit trail.

Method - Use one or a combination of the five models to configure a decision support system for your particular application.

BASIC Model 1 - Rank projects based on overall worth

Input: List of projects and comparisons based on overall worth.
(Program estimates missing comparisons.)

Output: Project ranks and weights and an estimate of the consistency of comparisons.

ADDITIVE (Attributes) Model 2 - Rank projects based on multiple criteria.

Input: List of projects and attributes, attribute comparisons, then project comparisons with respect to each attribute.
(Program estimates missing comparisons.)

Output: Attribute ranks, weights and estimate of consistency of comparison; within each attribute, project ranks, weights and consistency estimates; then, final ranks and weights of projects.

VOTING Model 3 - Combine a committee's project weights.

Input: Project weights produced by execution of other models (using the same set of projects).

Output: Final project ranks and weights.

HIERARCHY Model 4 - Modify and combine subordinates' project weights.

Input: Project weights produced by execution of other models by subordinates ranking different projects; list of projects and comparisons to be added, modified or deleted; new comparisons connecting the (revised) subordinates' comparisons (program estimates missing comparisons).

Output: Final project ranks and weights and consistency estimate.

CONSTRAINTS Model 5 - Allocate scarce resources, such as money.

Input: List of limiting constraints (such as costs, manpower, facilities); project weights produced by executing other models; for each project and each constraint, the requirements of the project.

Output: List of projects to fund and value of the objective function.

b. DIRECTIONS FOR USE

(1) STEP 1: Select Model(s) and Prepare Input

(a) BASIC Model 1 Rank Projects Based on Overall Worth.

The weights produced by executing this model may be final or they may be used again. At a later time, comparisons may be retrieved from a file, viewed and changed before rerunning Model 1. Alternatively, the BASIC model can be run as a prerequisite to the VOTING, HIERARCHY, or CONSTRAINTS Model(s).

1) New Set of Comparisons

Using an input form copied from Section III of this manual, fill in information about the projects to be ranked.

EXAMPLE OF LIST STYLE INPUT

NAME: <u>padgett</u> INPUT FILE NAME(S)(if any) <u>none</u>												
ORGANIZATION: <u>DLXB</u> OUTPUT FILE NAME <u>dlxbla.dat</u>												
PURPOSE: <u>compare projects</u> NAME OF ATTRIBUTE (if any) <u>overall worth</u>												
NUMBER	NAME (LIST PROJECTS OR ATTRIBUTES)	PREFERRED	NOT PREFERRED	DEGREE OF PREFERENCE								
				TIE	WEAK	STRONG	ABSOLUTE					
				1	2	3	4	5	6	7	8	9
1	PR1	3	1					5				
2	PR2	3	1									9
3	PR3	4	1		2							
4	PR4	5	1			3						
5	PR5	3	2			3						
		2	4									
		2	5		2							
		3	4									8
		3	5				4					
		5	4		2							

First, list projects then perform pairwise comparisons of projects. Beginning with the first project, compare it with a project below it on the list. For example, to show you prefer PR2 over PR1 by a degree of 5 (strongly): write 2 in the first row under PREFERRED, write 1 under NOT PREFERRED, and put a 5 in column 5 of the same row. For each project on the list, compare it with at least one project below it. The program will estimate missing comparisons. See Model 1 system flow diagram in Section A-3.d.(1) and execution of Model 1 using the above input in Section A-3.e.(1).

EXAMPLE OF MATRIX STYLE INPUT

(Optional input style especially desirable for HIERARCHY Model 4)

NAME _____ Input file name (if any): _____

ORGANIZATION: _____ Name of output file to contain results: _____
(See rules for file name selection below.)

PURPOSE: _____ Name of attribute (if any): _____

PROJECT OR ATTRIBUTE FOR FILE	PROJECT (OR ATTRIBUTE) NAME (Up to 32 spaces long)	COMPARISONS (see rules below)				
		1	2	3	4	5
1	PR1					
2	PR2	5			3	2
3	PR3	9	3		8	4
4	PR4	2				
5	PR5	3			2	

Up to 200 total projects and up to 20 attributes may be used.

Rules for comparisons:

Choose a scale: x to y where $0 < x < y < 50$ and x and y are real numbers.
(Each user may choose own scale)
For selected pairs, enter comparison.

For example, if you choose a scale of 1 to 9 and prefer PR2 over PR1 by a degree of 5 out of 9, enter 5 in row 2, column 1 of matrix. If you had preferred PR1 over PR2, a number should have been entered in row 1, column 2 - diagonally opposite to the 5 you entered. If PR3 is preferred over PR4 by a factor of 8 out of 9, enter 8 in row 3, column 2. If you do not prefer either project, indicate a tie by entering a 1 in either row 2, column 1 or row 1, column 2.

Missing comparisons will be estimated by the program. User must input enough comparisons to connect the rows by being sure to compare each listed project with at least one project below it on the list. A comparison in row i , column j automatically supplies a value for row j , column i . All diagonal values are set to 1 by the program.

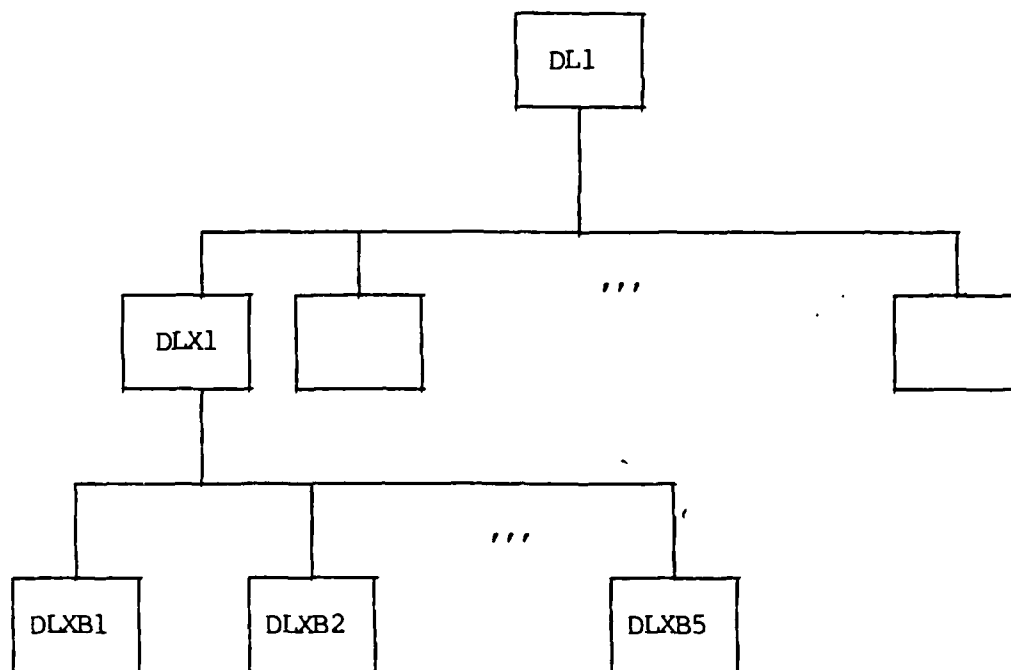


Figure A-1. Example of File Name Selection

Suggested rules for file name selection:

The left most letters of the filename are the user's organization letters. The second from right digit is the number of the individual user (1-5 at each level). The rightmost letter (a to z) indicates the particular file. A user's official file must have a rightmost zero (0) instead of a letter. All user accounts must be part of the LINDO group on the VAX 2. The system will automatically prefix the user's last name to the file name. The file type should be DAT.

Examples: [PADGETTM] DLXB1a.DAT

[PADGETTM] DLXB10.DAT (official)

2) Recheck of earlier run of BASIC Model 1.

Print off old output file (e.g., TYPE filename).

Prepare corrected input using one of the input forms described above.

(b) ADDITIVE (Attributes) Model 2

1) New weightings

LIST OF INPUT TO PREPARE FOR ADDITIVE MODEL:

- a) Prepare input for 1 to 20 attributes as for BASIC Model 1, listing names and comparisons for each attribute.
- b) For each attribute, prepare input as for BASIC Model 1, using up to 200 projects with respect to that attribute.

This results in one form for comparing attributes and separate forms for comparing projects with respect to each attribute. All will use the same output file. See the system flow diagram for Model 2 and the example of Model 2 in Sections A-3.d.(2) and A-3.e.(2), respectively.

2) Repeated weightings

Prepare input as described above, indicating changes to be made in comparison values. List names of input files where current information is stored.

(c) VOTING Model 3

All voters have equal weight and each must have previously weighted the same projects.

EXAMPLE OF INPUT VOTING MODEL 3

```

Number of voters (2-5): 2
Number of projects: 3
Name of official input file for each voter:
[PADGETTM] DLXB10.DAT
[SMITH] DLXB20.DAT

```

Project	Project
Number in	Name in
All Files	All Files
1	PR1
2	PR2
3	PR3

Note: If an inconsistency in the number of projects in each file is found, the lowest number will be used. If an inconsistency in the names of projects is found, the names from the first file will be used. Any inconsistencies will be reported to the user. Only official files (ending in 0.DAT) should be used for input! See examples in Sections A-3.d.(3) and A-3.e.(3) and A-3.f.

(d) HIERARCHY Model 4

First, have subordinates produce individual lists of weights using BASIC Model 1 or ADDITIVE Model 2, storing the results in an official file. If individuals are ranking the same tasks, results should be pooled using VOTING Model 3 (and/or HIERARCHY Model 4) to produce group lists of weights. Up to 20 lists, each ranking different projects, may be input to the HIERARCHY Model 4.

Second, retrieve each list of ranks and weights (e.g. using TYPE filename). Approve and/or modify these weights. (Remember the actual comparison matrices are stored in official files produced by Models 1, 2, 3, or 4). Omit projects certain to be funded or dropped. Add new projects if desired. The new matrix could be viewed to confirm agreement with earlier weights or spotlight needed changes.

Third, using a list of projects for each individual or group, fill in an input form as illustrated below. (Program will output this list for you. Input forms can be copied from the one in this user guide.)

EXAMPLE OF INPUT FOR HIERARCHY MODEL 4

Source	Project Name & Number in Ascending Order as in Input File	New Project Number	Comparisons to be changed or added						
			1	2	3	4	5	6	7
Subl:DLXB10	2 PR2	1	///	///	9				
	3 PR3	2	///	///					<u>5</u>
Subl:DLXB20	3 PROJ3	3		2	///	///	///	<u>6</u>	
	4 PROJ4	4		3	///	///	/0/		
	5 PROJ5	5			///	4	///		<u>7</u>
New projects added by supervisor (underlined)	1 NEW1	<u>6</u>					<u>5</u>		
	2 NEW2	<u>7</u>	<u>3</u>			<u>9</u>		<u>3</u>	

Note: Shaded areas represent matrices constructed by program from input files. Supervisor may still change entries here. Supervisor should add enough comparisons to connect all rows. Program will estimate missing values. See instructions for BASIC Model 1 input for more information on file name conventions and both list and matrix style input forms.

System flow diagrams and HIERARCHY Model examples are found in Sections A-3.d.(4) and A-3.e.(4), respectively. One possible configuration using all the models is illustrated in Section A-3.f.

Temporary diagonal convention: In order to override subordinates' preferences appearing below the diagonal of the subordinate's individual preference matrix, input the new preference as j over i by degree k and zero out the inverse of the original preference by inputting a new preference of i over j by degree 0. For example, to change new project number 5 to prefer 5 over 4 by degree 4 enter a 4 in row 5 column 4 and also enter a zero in row 4 column 5. For new (underlined) comparisons linking subordinates' matrices, only one entry is necessary.

(e) CONSTRAINTS Model 5

First, choose one or more constraints such as costs, manpower, and available facilities upon which to base the funding decision. Next, a unit, such as dollars, man hours, or hours available is input. Third, the total resources available for each restraint must be indicated. Fourth, resource requirements for each project are determined and entered using a list similar to the one below.

INPUT FOR CONSTRAINTS MODEL 5

CONSTRAINTS		UNITS	TOTAL RESOURCES
1.	Costs	Thousands of Dollars	5,000
2.	Manpower	Man Months	100

PROJECT NAME	RESOURCE REQUIREMENTS FOR CONSTRAINTS	
	RESOURCE #1	RESOURCE #2
PR1	2,000	40
PR2	750	30
PR3	100	16
PR4	2,300	55
PR5	500	19

System flow charts all indicate that the CONSTRAINTS Model may be entered following any other model(s). See Sections A-3.d.(5) and A-3.e.(5) for a system flow diagram and example of model execution. The composite example in section A-3.f. also uses the CONSTRAINTS Model.

(2) STEP 2: LOGON to Eglin VAX 2 Computer and Enter LINDO System

The Eglin VAX 2 can be accessed from a laboratory terminal or from a terminal using a dial-up modem.

(a) Dial-up Using model (optional)

(For LOGON from laboratory omit this section.)

Your dial-up terminal should be set to emulate a VT-100. Configuration required includes 8 bit, no parity, 1 stop bit, and no local echo.

Phone lines for 300 Baud or 1200 Baud are available. If one number is busy, dial the other one. Phone numbers are subject to change.

DIAL-UP PHONE NUMBERS

300 Baud Lines

(904) 882-8691
-8692

1200 Baud Lines

(904) 882-3811
-3798
-8329

(b) LOGON from laboratory terminal

Logon to Eglin VAX2 computer and enter LINDO system. (Caps represent system output; underlined small letters are user input; remarks are in parentheses.)

EXAMPLE OF LOGON AND ENTRY TO LINDO SYSTEM FROM LABORATORY TERMINAL:

```
SYSTEM: UV2          (return)
USERNAME: Colburn     (return)
PASSWORD: 4AC23A8     (return)
$: Lindo             (return) (Specify model and files)
: User              (return)
```

(3) STEP 3: Executive Desired Model and Interpret Results

Respond to system prompts. Use prepared input. Refine your weights by repeating as needed. See system flow diagrams and examples in Sections A-3.d., A-3.e., and A-3.f.

Interpretation of results can be quick and simple or intensive and recursive, according to the user's need and his satisfaction with preliminary results.

Briefly, the output from BASIC Model 1 consists of a ranked and weighted list of the projects (or other items) compared. The objective function (OBJ) represents the sum of the errors due to inconsistent input by the user. The index is the objective function divided by the number (n) of projects compared. The optionally viewed Delta matrix displays the difference between the user's input, a_{ij} , and w_i/w_j , the input expected for row i and column j for perfect consistency. So, a large number in row i column j of the Delta matrix, say d_{ij} , gives a possible source of inconsistency. If there is a high inconsistency, and d_{ij} is large the user should reevaluate his comparisons, particularly those involving projects i and j. For more detailed instruction, the user may refer to the body of the final report and/or contact the principal investigator.

(4) STEP 4: LOGOUT, Save or Delete Output File

```
ENTER "QUIT" TO LEAVE LINDO
: quit                      (return)
SAVE OR DELETE OUTPUT FILE(S/D) s (return)
ENTER "LOGOUT" TO LEAVE VAX2
: logout                    (return)
```

c. INPUT FORMS

Example input forms for list, matrix, and constraints model may be duplicated for your use in planning program input.

Purpose:	Name of attribute (if any):

[illegible]

Name of attribute (if any):

```

Project and Name
Attribute | Name
for File | (up to 32 spaces long) | 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

```

[illegible]

Name _____ Input file name (if any): _____

Organization _____ Name of output file to contain results: _____

Purpose _____

PROJECT (OR ATTRIBUTE) NAME (UP TO 32 SPACES LONG)	RESOURCE REQUIREMENTS FOR CONSTRAINT #									
	1	2	3	4	5	6	7	8	9	10
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										

Name: _____ Input file name (if any): _____

Organization: _____ Name of output file to contain results: _____

Purpose: _____

	CONSTRAINTS	UNITS	TOTAL RESOURCES
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

d. SYSTEM FLOW DIAGRAMS

The following diagrams outline the user input needed for each model type and indicate possible responses to the output from each model. The different models may be treated as modules forming a complex system, or run as stand-alone additions, or updates to the database.

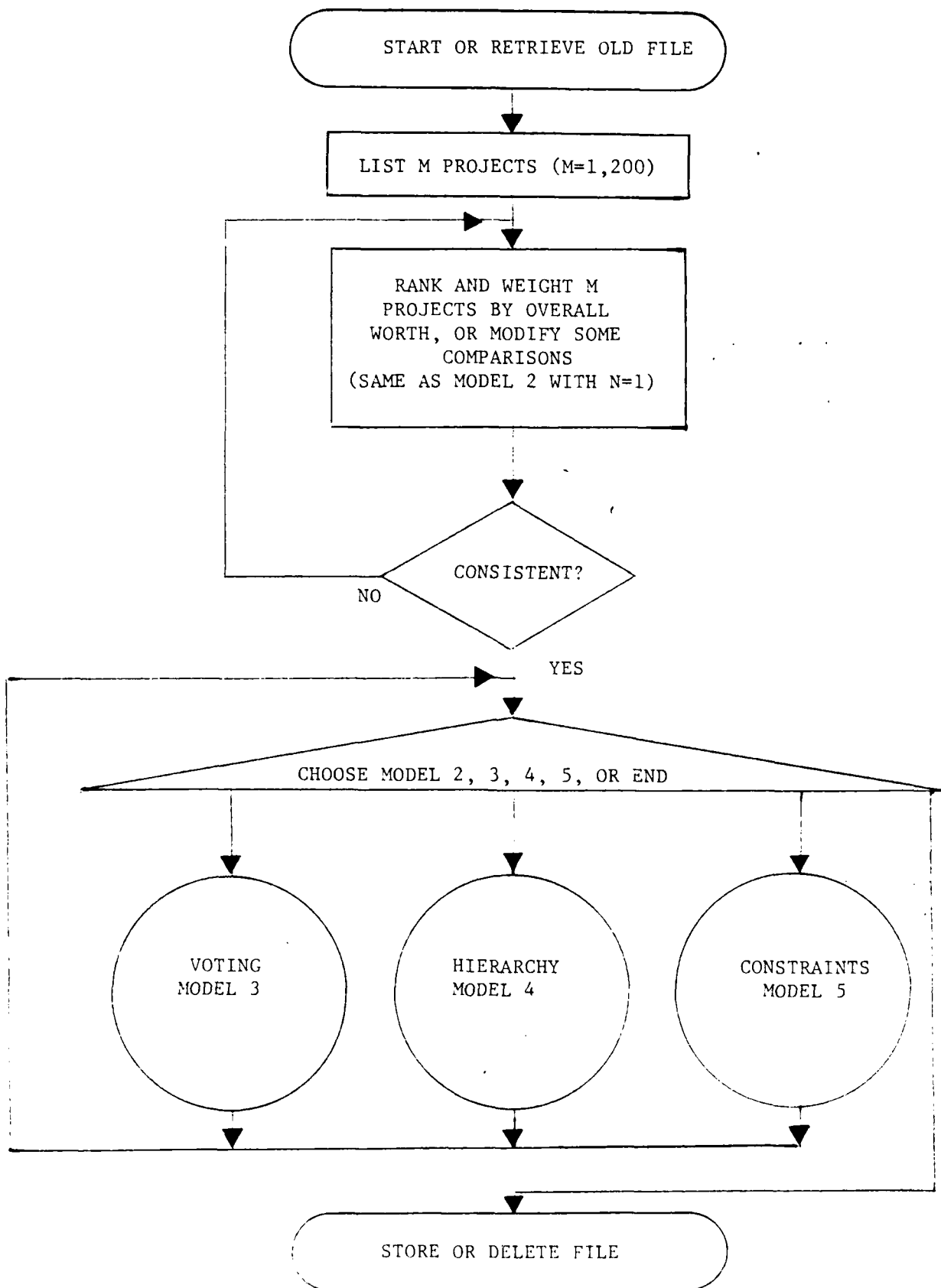


Figure A-2. (1) Basic Model 1 (with refinements and constraints optional).

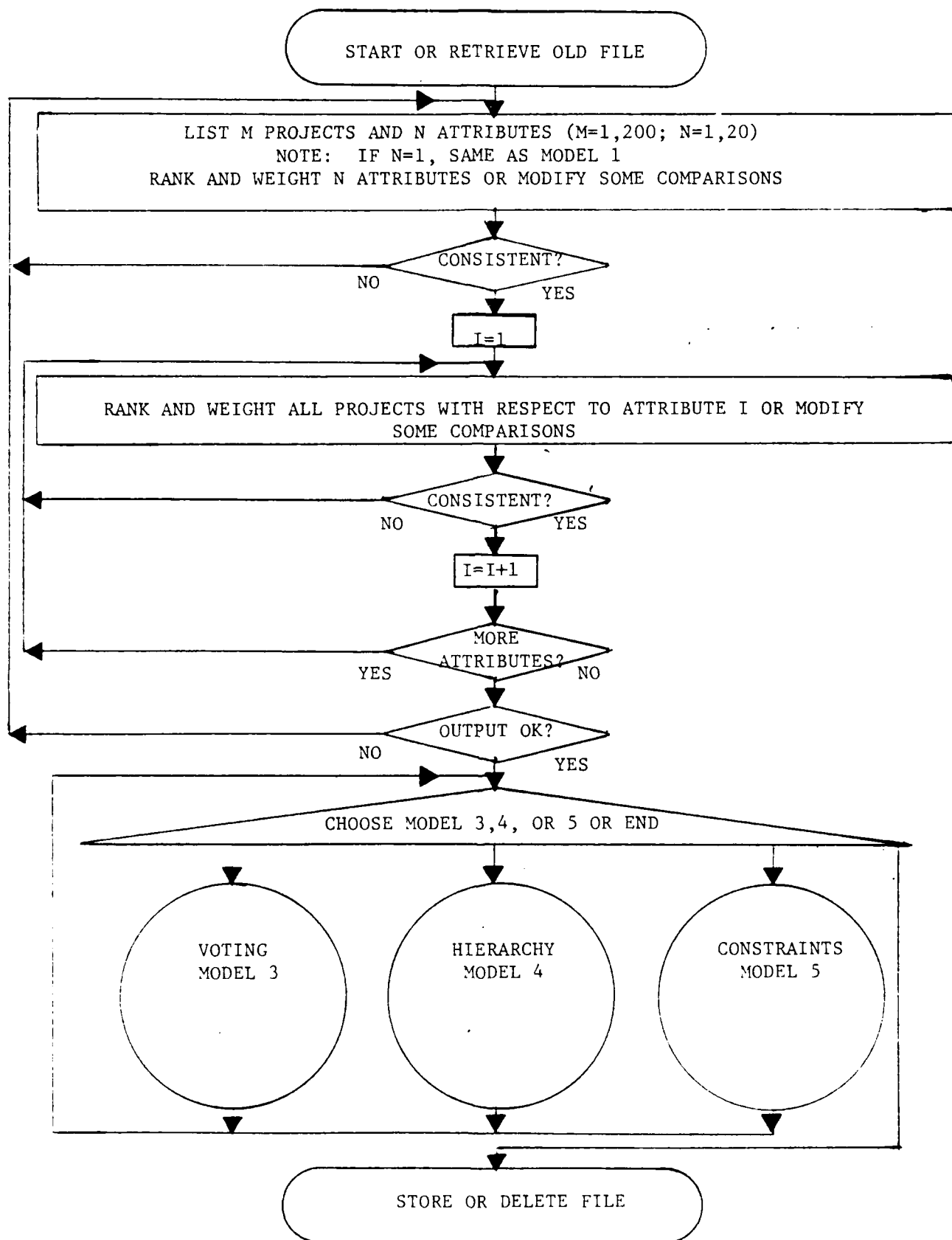


Figure A-3. (2) Additive (Attributes) Model 2.

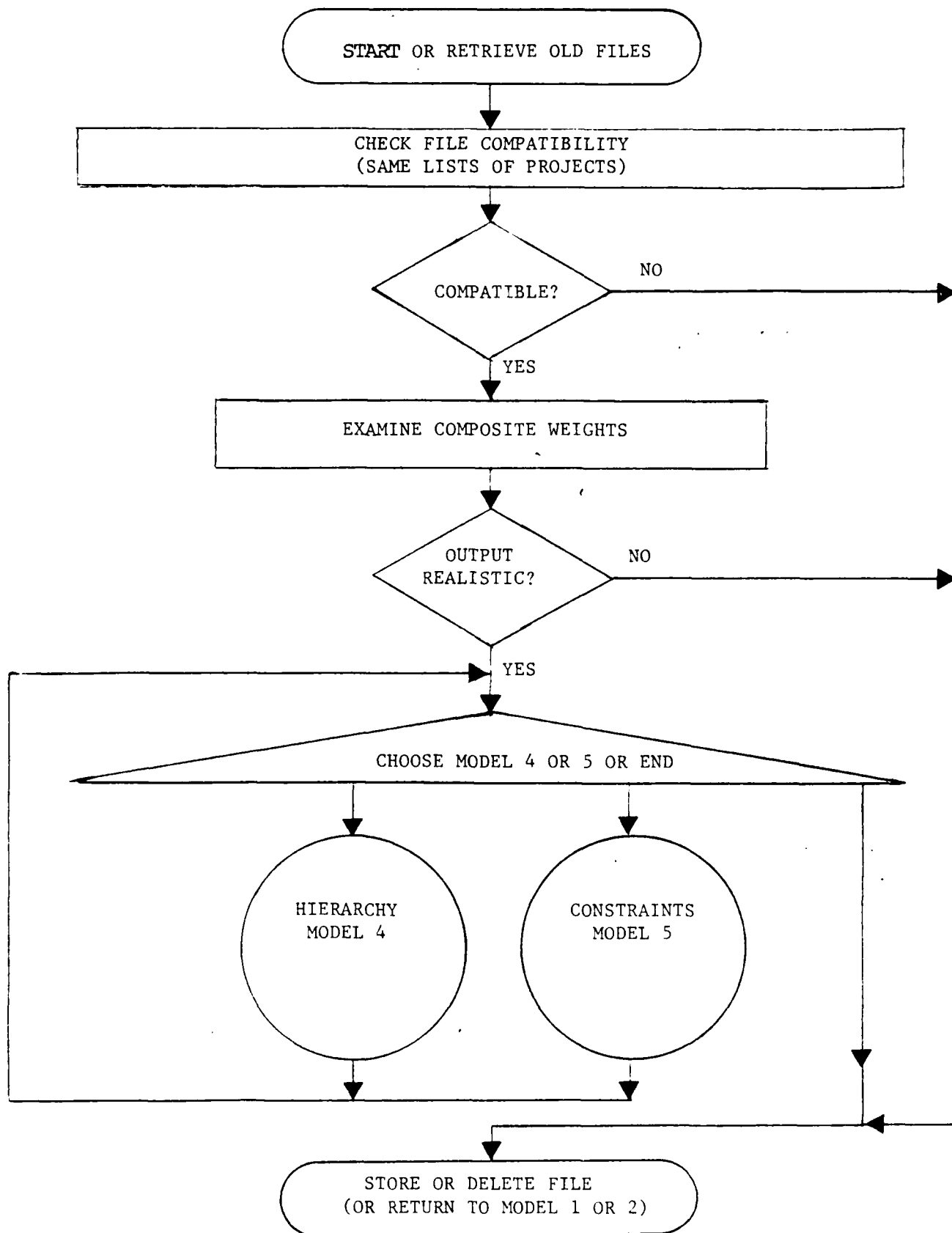


Figure A-4. (3) Voting Model 3.

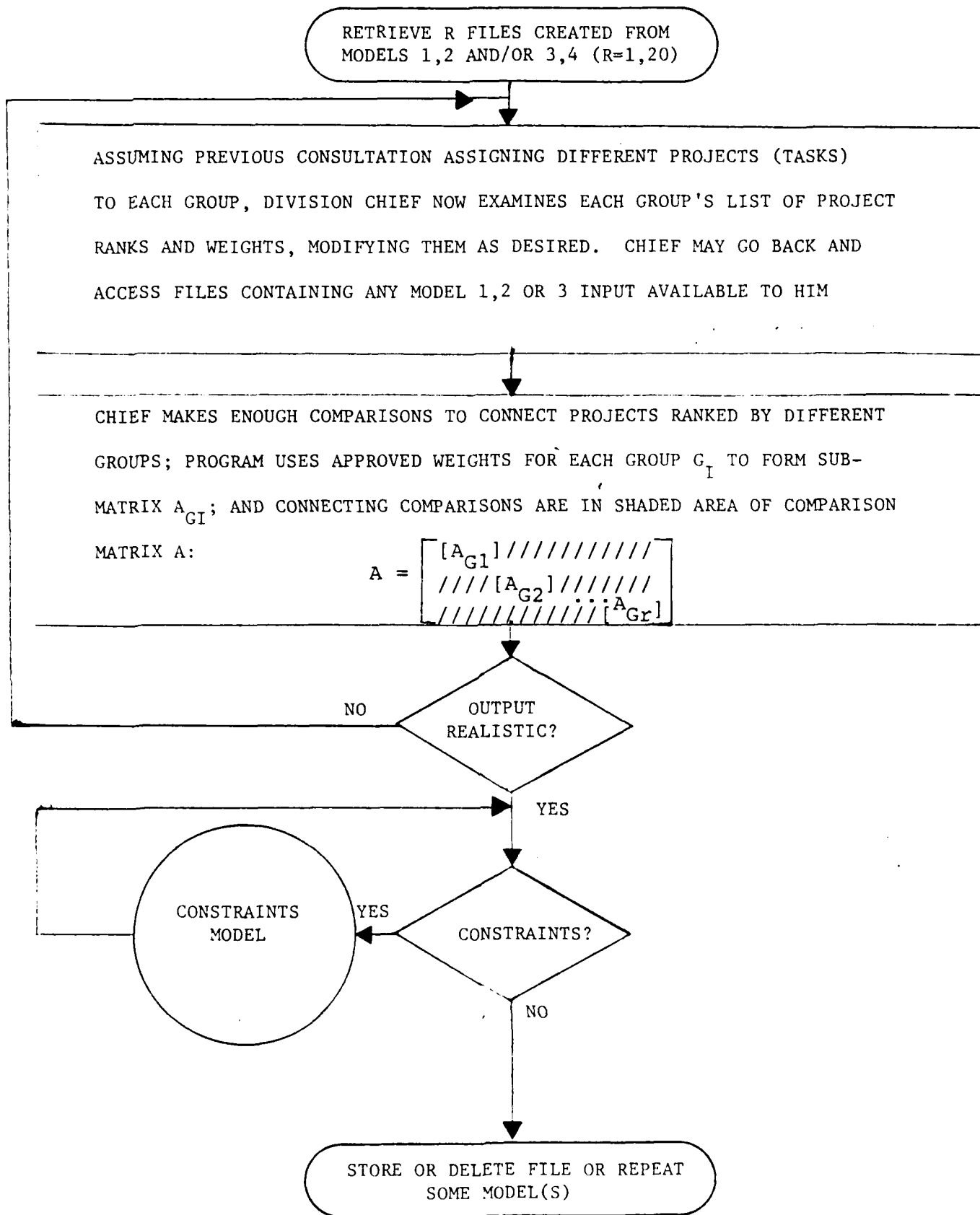


Figure A-5. (4) Hierarchy Model 4.

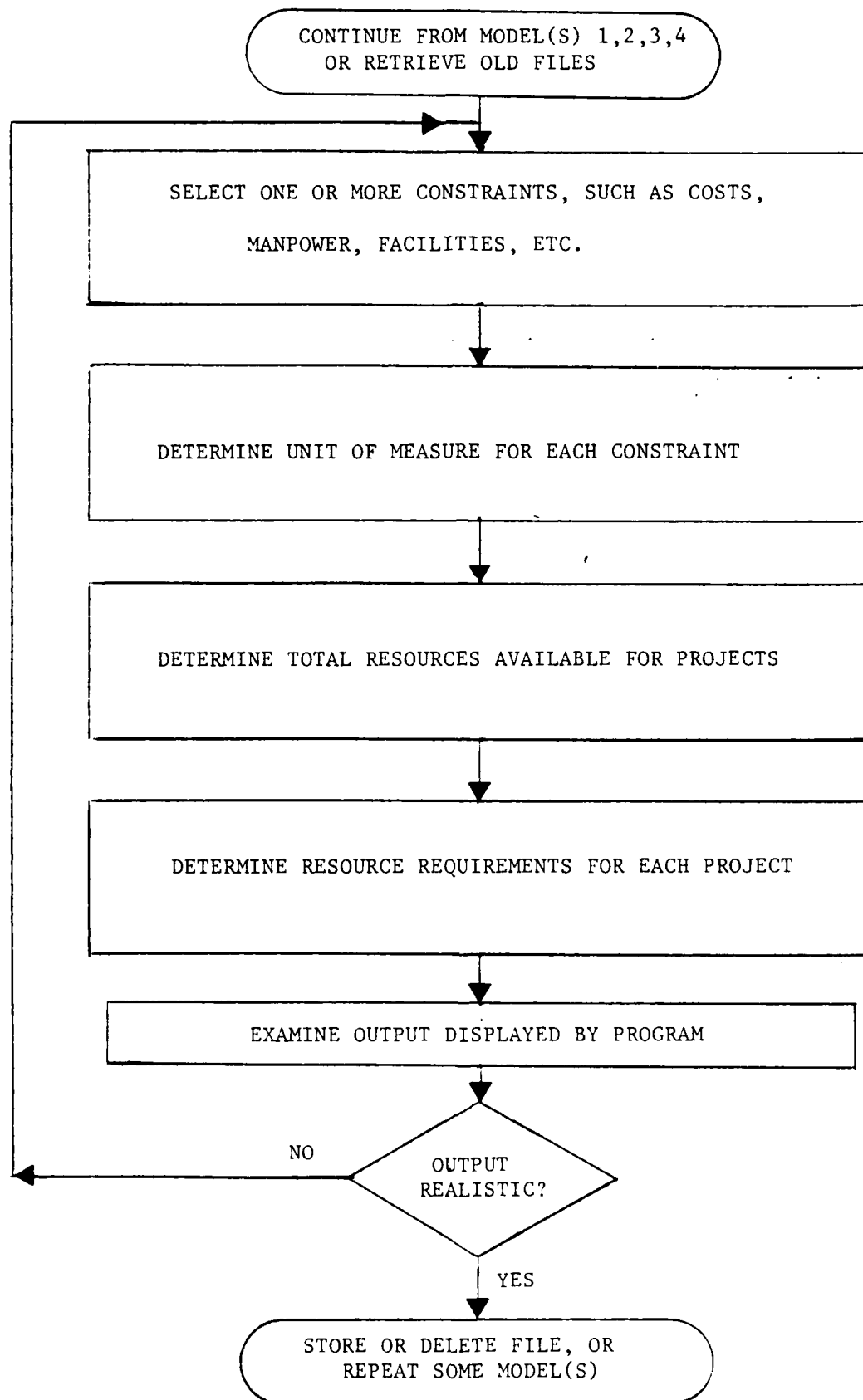


Figure A-6. (5) Constraints Model 5.

e. EXAMPLES OF EACH MODEL

(1) BASIC MODEL 1

(With refinements and constraints optional)

INPUT FILE

Name: Colburn Input file name (if any): None
 Organization: dlxb Name of output file to contain results: dlxpla.dat
 Purpose: example of Model 1, Basic Model Name of attribute (if any): overall worth

Project or Attribute (or Attribute) Comparisons

Attribute Name		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
for File (up to 32 spaces long)		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	PR1																								
2	PR2	5		3	2																				
3	PR3	19	3	8	4																				
4	PR4	12																							
5	PR5	13		2																					
6																									
7																									
8																									
9																									
10																									
11																									
12																									
13																									
14																									
15																									
16																									
17																									
18																									
19																									
20																									
21																									
22																									
23																									
24																									

EXECUTED RUN

ZPHUID-I-INIT. Recording initiated at 21 21 38 32
 \$ LINDO
 LINDO (VC 6 DEC 82)
 USER

LINDO USER INTERFACE
 FOR PROJECT RANKING
 MENU 0 0

- 0 --ENTER (CHANGE) HEADER INFORMATION
- 1 --EXECUTE BASIC MODEL
- 2 --EXECUTE ADDITIVE (ATTRIBUTES) MODEL
- 3 --EXECUTE VOTING MODEL
- 4 --EXECUTE HIERARCHY MODEL
- 5 --EXECUTE CONSTRAINTS MODEL
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --END PROGRAM, DELETE RESULTS
- 8 --END PROGRAM, SAVE(PRINT) RESULTS

PLEASE ENTER NUMBER OF YOUR CHOICE(0)

PLEASE ENTER YOUR NAME

Project:
 ORGANIZATION (DLX, DLG, ETC).
 File

PURPOSE (IF THIS FILE IS OFFICIAL, SO STATE)
 ENTER A MAXIMUM OF FIVE LINES, ENTERING A BLANK LINE
 TO QUIT BEFORE FIVE LINES
 Compare Projects

MENU 0 0

- 0 --ENTER (CHANGE) HEADER INFORMATION
- 1 --EXECUTE BASIC MODEL
- 2 --EXECUTE ADDITIVE (ATTRIBUTES) MODEL
- 3 --EXECUTE VOTING MODEL
- 4 --EXECUTE HIERARCHY MODEL
- 5 --EXECUTE CONSTRAINTS MODEL
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --END PROGRAM, DELETE RESULTS
- 8 --END PROGRAM, SAVE(PRINT) RESULTS

PLEASE ENTER NUMBER OF YOUR CHOICE(1)

MENU 1 1 -- BASIC MODEL

- 0 --SPECIFY NUMBER OF PROJECTS
- 1 --READ OLD PROJECT MATRIX FROM FILE
- 2 --ENTER (CHANGE) PROJECT NAMES
- 3 --ENTER (CHANGE) (ADD) PROJECT COMPARISONS
- 4 --DISPLAY COMPARISONS
- 5 --CALCULATE HEIGHTS
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF YOUR CHOICE (2)

RANK	PROJECT # AND NAME	WEIGHT
1	3 pr3	0.54545456
2	2 pr2	0.20454545
3	5 pr5	0.13636364
4	4 pr4	0.06818182
5	1 pr1	0.04545455

OBJ= 0 3182. INDEX= 0 0636--CONSISTENT
VIEW DELTA MATRIX (Y/(N))?

MENU 1 1 -- BASIC MODEL

- 0 --SPECIFY NUMBER OF PROJECTS
- 1 --READ OLD PROJECT MATRIX FROM FILE
- 2 --ENTER (CHANGE) PROJECT NAMES
- 3 --ENTER (CHANGE) (ADD) PROJECT COMPARISONS
- 4 --DISPLAY COMPARISONS
- 5 --CALCULATE WEIGHTS
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF YOUR CHOICE (7)

MENU 0 0

- 0 --ENTER (CHANGE) HEADER INFORMATION
- 1 --EXECUTE BASIC MODEL
- 2 --EXECUTE ADDITIVE (ATTRIBUTES) MODEL
- 3 --EXECUTE VOTING MODEL
- 4 --EXECUTE HIERARCHY MODEL
- 5 --EXECUTE CONSTRAINTS MODEL
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --END PROGRAM, DELETE RESULTS
- 8 --END PROGRAM, SAVE (PRINT) RESULTS

PLEASE ENTER NUMBER OF YOUR CHOICE(8)

ENTER NAME OF OUTPUT FILE

012013.dat

WOULD YOU CARE FOR A PRINTED COPY (Y/N) ? (N)

quit
FORTRAN STOP
* photo/off

OUTPUT FILE

```

=001NAME
  padgettcm
=002ORGANIZATION
  dlrb
=003PURPOSE
  compare projects

```

```

=004MODEL TYPE (1-3)
  1
=005NUMBER OF PROJECTS(1-200)
  5
=006NUMBER OF ATTRIBUTES(1- 20)
  1
=007NUMBER AND NAME OF ATTRIBUTES
  1 OVERALL WORTH

```

```

999999
=008ATTRIBUTE MATRIX (M X N WHERE N IS # OF ATTRIBUTES)
  1 00000000

```

```

999999
=009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES)
  0 00000000

```

```

=010NUMBER AND NAME OF PROJECTS
  1 pr1
  2 pr2
  3 pr3
  4 pr4
  5 pr5

```

```

999999
= 11PROJECT MATRIX FOR ATTRIBUTE # 1
  1 00000000 0 00000000 0 00000000 0 00000000 0 00000000
  5 00000000 1 00000000 0 00000000 3 00000000 2 00000000
  9 00000000 3 00000000 1 00000000 8 00000000 4 00000000
  2 00000000 0 00000000 0 00000000 1 00000000 0 00000000
  3 00000000 0 00000000 0 00000000 2 00000000 1 00000000

```

```

999999
= 12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES)
  0 04545455 0 20454545 0 54545456 0 06818182 0 13636364
= 13FINAL PROJECT WEIGHTS (SAME ORDER AS NAMES)
  0 04545455 0 20454545 0 54545456 0 06818182 0 13636364
999999

```


(2) ADDITIVE MODEL 2

none

d1xb2a.dat

Results:

AT3

79

EXECUTED RUN

%PHOTO-I--INIT, Recording initiated at 21 26 32 57
 \$ lindo
 LINDO (UC 6 DEC 82)
 user

LINDO USER INTERFACE
 FOR PROJECT RANKING
 MENU 0 0

- 0 --ENTER (CHANGE) HEADER INFORMATION
- 1 --EXECUTE BASIC MODEL
- 2 --EXECUTE ADDITIVE (ATTRIBUTES) MODEL
- 3 --EXECUTE VOTING MODEL
- 4 --EXECUTE HIERARCHY MODEL
- 5 --EXECUTE CONSTRAINTS MODEL
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --END PROGRAM, DELETE RESULTS
- 8 --END PROGRAM, SAVE(PRINT) RESULTS

PLEASE ENTER NUMBER OF YOUR CHOICE(0)

PLEASE ENTER YOUR NAME

colburn

ORGANIZATION (DLX, DLXB, ETC):

dlb

PURPOSE (IF THIS FILE IS OFFICIAL, SO STATE)
 ENTER A MAXIMUM OF FIVE LINES, ENTERING A BLANK LINE
 TO QUIT BEFORE FIVE LINES.

compare projects using attributes

MENU 0 0

- 0 --ENTER (CHANGE) HEADER INFORMATION
- 1 --EXECUTE BASIC MODEL
- 2 --EXECUTE ADDITIVE (ATTRIBUTES) MODEL
- 3 --EXECUTE VOTING MODEL
- 4 --EXECUTE HIERARCHY MODEL
- 5 --EXECUTE CONSTRAINTS MODEL
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --END PROGRAM, DELETE RESULTS
- 8 --END PROGRAM, SAVE(PRINT) RESULTS

PLEASE ENTER NUMBER OF YOUR CHOICE(1):

MENU 1 2--ADDITIVE (ATTRIBUTES) MODEL

- 0 --SPECIFY NUMBER OF ATTRIBUTES
- 1 --READ OLD ATTRIBUTES MATRIX FROM FILE
- 2 --SPECIFY NUMBER OF PROJECTS
- 3 --READ OLD PROJECT MATRIX FROM FILE
- 4 --ENTER (CHANGE) ATTRIBUTE NAMES
- 5 --ENTER (CHANGE) PROJECT NAMES
- 6 --ENTER (CHANGE) (ADD) ATTRIBUTE COMPARISONS
- 7 --ENTER (CHANGE) (ADD) PROJECT COMPARISONS
- 8 --VIEW PROJECT OR ATTRIBUTE COMPARISONS
- 9 --CALCULATE ATTRIBUTE AND PROJECT WEIGHTS
- 10 --HELP WITH PROJECT RANKING INTERFACE

11--RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF YOUR CHOICE (4):

ENTER ATTRIBUTE NAMES. QUIT WITH A BLANK LINE

#1
att1 2

att2 3

att3 4
#

MENU 1 2--ADDITIVE (ATTRIBUTES) MODEL

- 0 --SPECIFY NUMBER OF ATTRIBUTES
- 1 --READ OLD ATTRIBUTES MATRIX FROM FILE
- 2 --SPECIFY NUMBER OF PROJECTS
- 3 --READ OLD PROJECT MATRIX FROM FILE
- 4 --ENTER (CHANGE) ATTRIBUTE NAMES
- 5 --ENTER (CHANGE) PROJECT NAMES
- 6 --ENTER (CHANGE) (ADD) ATTRIBUTE COMPARISONS
- 7 --ENTER (CHANGE) (ADD) PROJECT COMPARISONS
- 8 --VIEW PROJECT OR ATTRIBUTE COMPARISONS
- 9 --CALCULATE ATTRIBUTE AND PROJECT WEIGHTS
- 10--HELP WITH PROJECT RANKING INTERFACE
- 11--RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF YOUR CHOICE (6):

ATTRIBUTE COMPARISONS
ENTER COMPARISONS IN THE FORM ROW COLUMN COMPARISON
ENTER ZEROS TO QUIT

1 2 3
3 1 5
3 2 2
0 0 0

MENU 1 2--ADDITIVE (ATTRIBUTES) MODEL

- 0 --SPECIFY NUMBER OF ATTRIBUTES
- 1 --READ OLD ATTRIBUTES MATRIX FROM FILE
- 2 --SPECIFY NUMBER OF PROJECTS
- 3 --READ OLD PROJECT MATRIX FROM FILE
- 4 --ENTER (CHANGE) ATTRIBUTE NAMES
- 5 --ENTER (CHANGE) PROJECT NAMES
- 6 --ENTER (CHANGE) (ADD) ATTRIBUTE COMPARISONS
- 7 --ENTER (CHANGE) (ADD) PROJECT COMPARISONS
- 8 --VIEW PROJECT OR ATTRIBUTE COMPARISONS
- 9 --CALCULATE ATTRIBUTE AND PROJECT WEIGHTS
- 10--HELP WITH PROJECT RANKING INTERFACE
- 11--RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF YOUR CHOICE (5)

ENTER PROJECT NAMES. QUIT WITH A BLANK LINE

#1
proj
#


```
pr2      3
#
pr3      4
#
pr4      5
#
```

MENU 1 2--ADDITIVE (ATTRIBUTES) MODEL

```
0 --SPECIFY NUMBER OF ATTRIBUTES
1 --READ OLD ATTRIBUTES MATRIX FROM FILE
2 --SPECIFY NUMBER OF PROJECTS
3 --READ OLD PROJECT MATRIX FROM FILE
4 --ENTER (CHANGE) ATTRIBUTE NAMES
5 --ENTER (CHANGE) PROJECT NAMES
6 --ENTER (CHANGE) (ADD) ATTRIBUTE COMPARISONS
7 --ENTER (CHANGE) (ADD) PROJECT COMPARISONS
8 --VIEW PROJECT OR ATTRIBUTE COMPARISONS
9 --CALCULATE ATTRIBUTE AND PROJECT WEIGHTS
10--HELP WITH PROJECT RANKING INTERFACE
11--RETURN TO MAIN MENU
```

PLEASE ENTER NUMBER OF YOUR CHOICE (7):

```
WITH RESPECT TO ATTRIBUTE 1 att1
ENTER COMPARISONS IN THE FORM ROW COLUMN COMPARISON
ENTER ZEROS TO QUIT.
```

```
1 2 3
1 3 3
1 4 2
4 3 2
```

```
0 0 0
WITH RESPECT TO ATTRIBUTE 2 att2
ENTER COMPARISONS IN THE FORM ROW COLUMN COMPARISON
ENTER ZEROS TO QUIT
```

```
2 1 4
1 3 2
2 4 3
0 0 0
```

```
WITH RESPECT TO ATTRIBUTE 3 att3
ENTER COMPARISONS IN THE FORM ROW COLUMN COMPARISON
ENTER ZEROS TO QUIT.
```

```
1 2 3
1 3 6
1 4 2
2 2 2
0 0 0
```

MENU 1 2--ADDITIVE (ATTRIBUTES) MODEL

```
0 --SPECIFY NUMBER OF ATTRIBUTES
1 --READ OLD ATTRIBUTES MATRIX FROM FILE
2 --SPECIFY NUMBER OF PROJECTS
3 --READ OLD PROJECT MATRIX FROM FILE
4 --ENTER (CHANGE) ATTRIBUTE NAMES
5 --ENTER (CHANGE) PROJECT NAMES
```

6 --ENTER (CHANGE) (ADD) ATTRIBUTE COMPARISONS
 7 --ENTER (CHANGE) (ADD) PROJECT COMPARISONS
 8 --VIEW PROJECT OR ATTRIBUTE COMPARISONS
 9 --CALCULATE ATTRIBUTE AND PROJECT WEIGHTS
 10--HELP WITH PROJECT RANKING INTERFACE
 11--RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF YOUR CHOICE (9) :

YOU ARE NOW ENTERING THE LINDO SYSTEM

WHEN ASKED IF YOU WISH TO DO A SENSITIVITY ANALYSIS, RESPOND WITH AN "N"
 LP OPTIMUM FOUND AT STEP 4

DO RANGE(SENSITIVITY) ANALYSIS?

> n

ATTRIBUTE WEIGHTS

RANK	ATTRIBUTE # AND NAME	WEIGHT
1	3 att3	0.78947325
2	1 att1	0.15789473
3	2 att2	0.05263158

OBJ= 0.6842, INDEX= 0.1711--SOME CONSISTENCY

VIEW DELTA MATRIX (Y/(N))?

" DISPLAY PROJECT WEIGHTS FOR EACH ATTRIBUTE?(Y/(N))

Y

YOU ARE NOW ENTERING THE LINDO SYSTEM

WHEN ASKED IF YOU WISH TO DO A SENSITIVITY ANALYSIS, RESPOND WITH AN "N"
 LP OPTIMUM FOUND AT STEP 5

DO RANGE(SENSITIVITY) ANALYSIS?

> n

WITH RESPECT TO ATTRIBUTE 1 att1

RANK	PROJECT # AND NAME	WEIGHT
1	1 pr1	0.46153843
2	4 pr4	0.23076922
3	3 pr3	0.15384616
3	2 pr2	0.15384616

OBJ= 0.0769, INDEX= 0.0192--CONSISTENT

VIEW DELTA MATRIX(Y/(N))?

YOU ARE NOW ENTERING THE LINDO SYSTEM

WHEN ASKED IF YOU WISH TO DO A SENSITIVITY ANALYSIS, RESPOND WITH AN "N"
 LP OPTIMUM FOUND AT STEP 4

DO RANGE(SENSITIVITY) ANALYSIS?

> n

WITH RESPECT TO ATTRIBUTE 2 att2

RANK	PROJECT # AND NAME	WEIGHT
1	2 pr2	0.58536583
2	4 pr4	0.19512196
3	1 pr1	0.14634146
4	3 pr3	0.07317073

OBJ= 0.0666, INDEX= 0.0000--CONSISTENT

VIEW DELTA MATRIX(Y/(N))?

YOU ARE NOW ENTERING THE LINDO SYSTEM

YOU ARE NOW ENTERING THE LINDO SYSTEM

YOU ARE NOW ENTERING THE LINDO SYSTEM

YOU ARE NOW ENTERING THE LINDO SYSTEM

YOU ARE NOW ENTERING THE LINDO SYSTEM

YOU ARE NOW ENTERING THE LINDO SYSTEM

WHEN ASKED IF YOU WISH TO DO A SENSITIVITY ANALYSIS, RESPOND WITH AN "N"
 LP OPTIMUM FOUND AT STEP 4

DO RANGE(SENSITIVITY) ANALYSIS?
 WITH RESPECT TO ATTRIBUTE 3 att3

RANK	PROJECT # AND NAME	WEIGHT
1	1 pr1	0.50000000
2	4 pr4	0.25000000
3	2 pr2	0.16666667
4	3 pr3	0.08333334

OBJ= 0.0000, INDEX= 0.0000--CONSISTENT
 VIEW DELTA MATRIX(Y/N)?

FINAL WEIGHTS		WEIGHT
RANK	PROJECT # AND NAME	
1	1 pr1	0.47931348
2	4 pr4	0.24407524
3	2 pr2	0.18667918
4	3 pr3	0.09393207

HLT (RETURN) TO CONTINUE

MENU 1.2--ADDITIVE (ATTRIBUTES) MODEL

- 0 --SPECIFY NUMBER OF ATTRIBUTES
- 1 --READ OLD ATTRIBUTES MATRIX FROM FILE
- 2 --SPECIFY NUMBER OF PROJECTS
- 3 --READ OLD PROJECT MATRIX FROM FILE
- 4 --ENTER (CHANGE) ATTRIBUTE NAMES
- 5 --ENTER (CHANGE) PROJECT NAMES
- 6 --ENTER (CHANGE) (ADD) ATTRIBUTE COMPARISONS
- 7 --ENTER (CHANGE) (ADD) PROJECT COMPARISONS
- 8 --VIEW PROJECT OR ATTRIBUTE COMPARISONS
- 9 --CALCULATE ATTRIBUTE AND PROJECT WEIGHTS
- 10--HELP WITH PROJECT RANKING INTERFACE
- 11--RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF YOUR CHOICE (11)

MENU 0 0

- 0 --ENTER (CHANGE) HEADER INFORMATION
- 1 --EXECUTE BASIC MODEL
- 2 --EXECUTE ADDITIVE (ATTRIBUTES) MODEL
- 3 --EXECUTE VOTING MODEL
- 4 --EXECUTE HIERARCHY MODEL
- 5 --EXECUTE CONSTRAINTS MODEL
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --END PROGRAM, DELETE RESULTS
- 8 --END PROGRAM, SAVE (PRINT) RESULTS

PLEASE ENTER NUMBER OF YOUR CHOICE(8)

ENTER NAME OF OUTPUT FILE
 010001.DAT
 WOULD YOU CARE FOR A PRINTED COPY (Y/N) 1 (N)

quit
FORTRAK STOP
* photo/off

OUTPUT FILE

=001NAME
colburn
=002ORGANIZATION
dlb
=003PURPOSE
compare projects using attributes

=004MODEL TYPE (1-5)
2
=005NUMBER OF PROJECTS(1-200)
4
=006NUMBER OF ATTRIBUTES(1- 20)
3
=007NUMBER AND NAME OF ATTRIBUTES
1 att1
2 att2
3 att3

999999
=008ATTRIBUTE MATRIX (M X N WHERE N IS # OF ATTRIBUTES)
1 00000000 3 00000000 0 00000000
0 00000000 1 00000000 0 00000000
5 00000000 2 00000000 1 00000000
999999
=009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES)
0 15789473 0 05263158 0 78947365
=010NUMBER AND NAME OF PROJECTS
1 pr1
2 pr2
3 pr3
4 pr4

999999
= 11PROJECT MATRIX FOR ATTRIBUTE # 1
1 00000000 3 00000000 3 00000000 2 00000000
0 00000000 1 00000000 1 00000000 0 00000000
0 00000000 0 00000000 1 00000000 0 00000000
0 00000000 0 00000000 2 00000000 1 00000000
999999
= 12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES)
0 46153843 0 15284616 0 15384616 0 23076922
= 13PROJECT MATRIX FOR ATTRIBUTE # 2
1 00000000 0 00000000 2 00000000 0 00000000
4 00000000 1 00000000 0 00000000 3 00000000
0 00000000 0 00000000 1 00000000 0 00000000
0 00000000 0 00000000 0 00000000 1 00000000
999999
= 14PROJECT WEIGHTS FOR ATTRIBUTE # 2(SAME ORDER AS NAMES)
0 14634146 0 58536583 0 07317073 0 19312196
= 15PROJECT MATRIX FOR ATTRIBUTE # 3
1 00000000 3 00000000 6 00000000 2 00000000
0 00000000 1 00000000 2 00000000 0 00000000
0 00000000 0 00000000 1 00000000 0 00000000
0 00000000 0 00000000 0 00000000 1 00000000
999999
= 16PROJECT WEIGHTS FOR ATTRIBUTE # 3(SAME ORDER AS NAMES)
0 50000000 0 10000000 0 00000000 0 20000000
= 17PROJECT MATRIX FOR ATTRIBUTE # 4(SAME ORDER AS NAMES)
1 00000000 3 00000000 6 00000000 2 00000000
0 00000000 1 00000000 2 00000000 0 00000000
0 00000000 0 00000000 1 00000000 0 00000000
0 00000000 0 00000000 0 00000000 1 00000000
999999
= 18PROJECT WEIGHTS FOR ATTRIBUTE # 4(SAME ORDER AS NAMES)
0 50000000 0 10000000 0 00000000 0 20000000
= 19PROJECT MATRIX FOR ATTRIBUTE # 5(SAME ORDER AS NAMES)
1 00000000 3 00000000 6 00000000 2 00000000
0 00000000 1 00000000 2 00000000 0 00000000
0 00000000 0 00000000 1 00000000 0 00000000
0 00000000 0 00000000 0 00000000 1 00000000
999999
= 20PROJECT WEIGHTS FOR ATTRIBUTE # 5(SAME ORDER AS NAMES)
0 50000000 0 10000000 0 00000000 0 20000000

0 4753134B 0 18457918 0 09393207 0 24407524
999999

(3) VOTING MODEL 3

INPUT FILE


```

=001NAME
colburn
=002ORGANIZATION
dlrb
=003PURPOSE
input for model 3

=004MODEL TYPE (1-5)
1
=005NUMBER OF PROJECTS(1-200)
3
=006NUMBER OF ATTRIBUTES(1- 20)
1
=007NUMBER AND NAME OF ATTRIBUTES
1 OVERALL WORTH

999999
=008ATTRIBUTE MATRIX (M X N WHERE N IS # OF ATTRIBUTES)
1 00000000
999999
=009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES):
0 0000000
=010NUMBER AND NAME OF PROJECTS
1 pr1
2 pr2
3 pr3

999999
= 11PROJECT MATRIX FOR ATTRIBUTE # 1:
1 00000000 3 00000000 0 00000000
0 00000000 1 00000000 6 00000000
0 00000000 0 00000000 1 00000000
999999
= 12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES)
0 72000003 0 24000001 0 04000000
= 13FINAL PROJECT WEIGHTS (SAME ORDER AS NAMES)
0 72000003 0 24000001 0 04000000
999999

```

```

=001NAME
  colburn
=002ORGANIZATION
  dlxb
=003PURPOSE
  input for model 3

```

```

=004MODEL TYPE (1-5)
  1
=005NUMBER OF PROJECTS(1-200)
  3
=006NUMBER OF ATTRIBUTES(1- 20)
  1
=007NUMBER AND NAME OF ATTRIBUTES
  1 OVERALL WORTH

```

```

999999
=008ATTRIBUTE MATRIX (N X N WHERE N IS # OF ATTRIBUTES)
  1 00000000
999999
=009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES)
  0 00000000
=010NUMBER AND NAME OF PROJECTS
  1 pr1
  2 pr2
  3 pr3

```

```

999999
= 11PROJECT MATRIX FOR ATTRIBUTE # 1
  1 00000000 0 00000000 0 00000000
  4 00000000 1 00000000 0 00000000
  2 00000000 0 00000000 1 00000000
999999
= 12PROJECT WEIGHTS FOR ATTRIBUTE # 1 (SAME ORDER AS NAMES)
  0 14285715 0 57142850 0 28571430
= 13FINAL PROJECT WEIGHTS (SAME ORDER AS NAMES)
  0 14285715 0 57142850 0 28571430
999999

```

EXECUTED RUN

2PHOTO-[-INIT. Recording initiated at 04 24 58 81

* linfo

LINFO (UC 6 DEC 82)

user

LINDO USER INTERFACE
FOR PROJECT RANKING
MENU 0 0

- 0 --ENTER (CHANGE) HEADER INFORMATION
- 1 --EXECUTE BASIC MODEL
- 2 --EXECUTE ADDITIVE (ATTRIBUTES) MODEL
- 3 --EXECUTE VOTING MODEL
- 4 --EXECUTE HIERARCHY MODEL
- 5 --EXECUTE CONSTRAINTS MODEL
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --END PROGRAM, DELETE RESULTS
- 8 --END PROGRAM, SAVE (PRINT) RESULTS

PLEASE ENTER NUMBER OF YOUR CHOICE(0)

PLEASE ENTER YOUR NAME

colburn

ORGANIZATION (DLA, DL(B, ETC)

dlab

PURPOSE (IF THIS FILE IS OFFICIAL, SO STATE)
ENTER A MAXIMUM OF FIVE LINES, ENTERING A BLANK LINE
TO QUIT BEFORE FIVE LINES
to vote

MENU 0 0

- 0 --ENTER (CHANGE) HEADER INFORMATION
- 1 --EXECUTE BASIC MODEL
- 2 --EXECUTE ADDITIVE (ATTRIBUTES) MODEL
- 3 --EXECUTE VOTING MODEL
- 4 --EXECUTE HIERARCHY MODEL
- 5 --EXECUTE CONSTRAINTS MODEL
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --END PROGRAM, DELETE RESULTS
- 8 --END PROGRAM, SAVE (PRINT) RESULTS

PLEASE ENTER NUMBER OF YOUR CHOICE(1)

MENU 1 3 -- VOTER MODEL

- 0 ENTER (ADD) INPUT FILE NAMES
- 1 VERIFY INPUT FILES
- **CALCULATE WEIGHTS
- 3 HELP WITH PROJECT RANKING INTERFACE
- 4 RETURN TO MAIN MENU

PLEASE ENTER THE NUMBER OF YOUR CHOICE(0)

ENTER FILE NAMES OF VOTER, BLANK LINE WHEN DONE

dlab0.dat

dlab00.dat

MENU 1 3 -- VOTER MODEL

- 0 ENTER (ADD) INPUT FILE NAMES
- 1 VERIFY INPUT FILES
- 2 CALCULATE WEIGHTS
- 3 HELP WITH PROJECT RANKING INTERFACE
- 4 RETURN TO MAIN MENU

PLEASE ENTER THE NUMBER OF YOUR CHOICE(2).

RANK	PROJECT # AND NAME	WEIGHT
1	1 pr1	0.43142858
2	2 pr2	0.40571430
3	3 pr3	0.16285715

HIT (RETURN) TO CONTINUE

MENU 1 3 -- VOTER MODEL

- 0 ENTER (ADD) INPUT FILE NAMES
- 1 VERIFY INPUT FILES
- 2 CALCULATE WEIGHTS
- 3 HELP WITH PROJECT RANKING INTERFACE
- 4 RETURN TO MAIN MENU

PLEASE ENTER THE NUMBER OF YOUR CHOICE(4).

MENU 0 0

- 0 --ENTER (CHANGE) HEADER INFORMATION
- 1 --EXECUTE BASIC MODEL
- 2 --EXECUTE ADDITIVE (ATTRIBUTES) MODEL
- 3 --EXECUTE VOTING MODEL
- 4 --EXECUTE HIERARCHY MODEL
- 5 --EXECUTE CONSTRAINTS MODEL
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --END PROGRAM, DELETE RESULTS
- 8 --END PROGRAM, SAVE(PRINT) RESULTS

PLEASE ENTER NUMBER OF YOUR CHOICE(8)

ENTER NAME OF OUTPUT FILE

111111.dat

WOULD YOU CARE FOR A PRINTED COPY (Y/N) > (N)

1 quit

FORTRAN STOP

* PHOTOGRAPH

OUTPUT FILE

=001NAME
colburn
=002ORGANIZATION
dlb
=003PURPOSE
to vote

=004MODEL TYPE (1-5)
3
=005NUMBER OF PROJECTS(1-200)
3
=006NUMBER OF ATTRIBUTES(1- 20)
1
=007NUMBER AND NAME OF ATTRIBUTES
1 OVERALL WORTH

999999
=008ATTRIBUTE MATRIX (N X N WHERE N IS # OF ATTRIBUTES)
1 00000000

999999
=009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES)
0 00000000

=010NUMBER AND NAME OF PROJECTS
1 pr1
2 pr2
3 pr3

999999
= 11PROJECT MATRIX FOR ATTRIBUTE # 1
C 00000000 0 00000000 0 00000000
0 00000000 0 00000000 0 00000000
0 00000000 0 00000000 0 00000000
999999
= 12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES)
0 43142858 0 40571430 0 16285715
= 13FINAL PROJECT WEIGHTS (SAME ORDER AS NAMES)
0 43142858 0 40571430 0 16285715
999999

(4) HIERARCHY MODEL 4

INPUT FILE

Name Colburn Input file name (if any): dlxb10.dat dlxbo.dat
 Organisation: dlxb Name of output file to contain results: dlxbda.dat
 Purpose: Example of Model 4, Hierarchy Model Name of attribute (if any): _____

Project or Project (or Attribute) Comparisons

Attribute Name for File (up to 32 spaces long)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1 PR2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2 PR3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3 PROJ3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4 PROJ4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5 PROJ5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6 NEW1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7 NEW2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
12	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
13	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
14	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
15	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
17	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
19	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
20	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
21	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
22	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
23	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
24	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Colburn

Wage:

qx1p

d1xb4a.dat

Organization:

Name of output file to contain results:

Example of Model 4, Hierarchy Model

Name of attribute (if any):

[illegible]

```

=001NAME
  colburn
=002ORGANIZATION
  dirb
=003PURPOSE
  input to the hierarchy model

=004MODEL TYPE (1-3)
  1
=005NUMBER OF PROJECTS(1-200)
  3
=006NUMBER OF ATTRIBUTES(1- 20)
  1
=007NUMBER AND NAME OF ATTRIBUTES
  1 OVERALL WORTH

999999
=008ATTRIBUTE MATRIX (N X N WHERE N IS # OF ATTRIBUTES)
  1 00000000
999999
=009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES)
  0 00000000
=010NUMBER AND NAME OF PROJECTS
  1 pr1
  2 pr2
  3 pr3

999999
= 11PROJECT MATRIX FOR ATTRIBUTE # 1
  1 00000000 3 00000000 0 00000000
  0 00000000 1 00000000 4 00000000
  0 00000000 0 00000000 1 00000000
999999
= 12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES)
  0 70588237 0 23529412 0 05882353
= 13FINAL PROJECT WEIGHTS (SAME ORDER AS NAMES)
  0 70588237 0 23529412 0 05882353
999999

```

```

=001NAME
colburn
=002ORGANIZATION
dlb
=003PURPOSE
input to the hierarchy model

=004MODEL TYPE (1-3):
1
=005NUMBER OF PROJECTS(1-200):
5
=006NUMBER OF ATTRIBUTES(1- 20):
1
=007NUMBER AND NAME OF ATTRIBUTES
1 OVERALL NORTH

999999
=008ATTRIBUTE MATRIX (N X N WHERE N IS # OF ATTRIBUTES)
1 00000000
999999
=009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES)
0 00000000
=010NUMBER AND NAME OF PROJECTS
1 proj1
2 proj2
3 proj3
4 proj4
5 proj5

999999
= 11PROJECT MATRIX FOR ATTRIBUTE # 1
1 00000000 0 00000000 0 00000000 0 00000000 0 00000000
3 00000000 1 00000000 4 00000000 0 00000000 0 00000000
0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
5 00000000 0 00000000 0 00000000 1 00000000 0 00000000
0 00000000 0 00000000 0 00000000 4 00000000 1 00000000
999999
= 12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES)
0 03361345 0 10084033 0 02521008 0 16806722 0 67226887
= 13FINAL PROJECT WEIGHTS (SAME ORDER AS NAMES)
0 03361345 0 10084033 0 02521008 0 16806722 0 67226887
999999

```

EXECUTED RUN

%PHOTO-I-INIT, Recording initiated at 22:10:19.28
 \$ lingo
 LINDO (UC 6 DEC 82)
 user

LINDO USER INTERFACE
 FOR PROJECT RANKING
 MENU 0.0

- 0 --ENTER (CHANGE) HEADER INFORMATION
- 1 --EXECUTE BASIC MODEL
- 2 --EXECUTE ADDITIVE (ATTRIBUTES) MODEL
- 3 --EXECUTE VOTING MODEL
- 4 --EXECUTE HIERARCHY MODEL
- 5 --EXECUTE CONSTRAINTS MODEL
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --END PROGRAM, DELETE RESULTS
- 8 --END PROGRAM, SAVE(PRINT) RESULTS

PLEASE ENTER NUMBER OF YOUR CHOICE(0):

PLEASE ENTER YOUR NAME:

colburn

ORGANIZATION (DLX, DLXB, ETC):

dlxb

PURPOSE (IF THIS FILE IS OFFICIAL, SO STATE.)
 ENTER A MAXIMUM OF FIVE LINES, ENTERING A BLANK LINE
 TO QUIT BEFORE FIVE LINES.
 combine results from two files using hierarchy model

MENU 0.0

- 0 --ENTER (CHANGE) HEADER INFORMATION
- 1 --EXECUTE BASIC MODEL
- 2 --EXECUTE ADDITIVE (ATTRIBUTES) MODEL
- 3 --EXECUTE VOTING MODEL
- 4 --EXECUTE HIERARCHY MODEL
- 5 --EXECUTE CONSTRAINTS MODEL
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --END PROGRAM, DELETE RESULTS
- 8 --END PROGRAM, SAVE(PRINT) RESULTS

PLEASE ENTER NUMBER OF YOUR CHOICE(1):

HIERARCHY MODEL

ENTER THE NAME OF INPUT FILE # 1, OR BLANK TO QUIT
 file01.dat
 FOR FILE # 1 CHOOSE ACTION

- 0--VIEW HEADER INFORMATION
- 1--LIST PROJECTS
- 2--LOAD ALL PROJECTS
- 3--LOAD CERTAIN PROJECTS ONLY
- 4--LOAD NO PROJECTS
- 5--HELP ON PROJECT RANKING INTERFACE

PLEASE ENTER NUMBER OF CHOICE(2)
 3
 ENTER PROJECT NUMBERS TO BE INCLUDED, QUIT WITH 0
 2
 3
 0
 ENTER THE NAME OF INPUT FILE # 2 , OR BLANK TO QUIT
 d11b20.dat
 FOR FILE # 2 CHOOSE ACTION

0--VIEW HEADER INFORMATION
 1--LIST PROJECTS
 2--LOAD ALL PROJECTS
 3--LOAD CERTAIN PROJECTS ONLY
 4--LOAD NO PROJECTS
 5--HELP ON PROJECT RANKING INTERFACE

PLEASE ENTER NUMBER OF CHOICE(2):

3
 ENTER PROJECT NUMBERS TO BE INCLUDED, QUIT WITH 0

3
 4
 5
 0

ENTER THE NAME OF INPUT FILE # 3 , OR BLANK TO QUIT

MENU 1.4.1 HIERARCHY CONTINUED

0 --VERIFY FILE INPUT
 1 --RECALL ADDITIONAL PROJECTS
 ***ADD NEW PROJECTS OF YOUR OWN
 3 --CHANGE PROJECT NAMES
 4 --LOAD COMPARISONS FROM SUBORDINATE FILES
 5 --SPECIFY NUMBER OF ATTRIBUTES
 6 --READ OLD ATTRIBUTE MATRIX FROM A FILE
 7 --ENTER (CHANGE) ATTRIBUTE NAMES
 ***--ENTER (CHANGE) (ADD) ATTRIBUTE COMPARISONS
 ***--ADD (CHANGE) PROJECT COMPARISONS
 10--DISPLAY PROJECT OR ATTRIBUTE MATRIX
 ***--CALCULATE WEIGHTS
 12--HELP ON PROJECT RANKING INTERFACE
 13--RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF CHOICE(4)

MENU 1.4.1 HIERARCHY CONTINUED

0 --VERIFY FILE INPUT
 ***--RECALL ADDITIONAL PROJECTS
 2 --ADD NEW PROJECTS OF YOUR OWN
 3 --CHANGE PROJECT NAMES
 ***--LOAD COMPARISONS FROM SUBORDINATE FILES
 5 --SPECIFY NUMBER OF ATTRIBUTES
 6 --READ OLD ATTRIBUTE MATRIX FROM A FILE
 7 --ENTER (CHANGE) ATTRIBUTE NAMES

**--ENTER (CHANGE) (ADD) ATTRIBUTE COMPARISONS
 9 --ADD (CHANGE) PROJECT COMPARISONS
 10--DISPLAY PROJECT OR ATTRIBUTE MATRIX
 11--CALCULATE WEIGHTS
 12--HELP ON PROJECT RANKING INTERFACE
 13--RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF CHOICE(9)

2

ENTER NAMES OF NEW PROJECTS. QUIT WITH A BLANK

new1

new2

MENU 1 + 1 HIERARCHY CONTINUED

0 --VERIFY FILE INPUT
 ***--RECALL ADDITIONAL PROJECTS
 2 --ADD NEW PROJECTS OF YOUR OWN
 3 --CHANGE PROJECT NAMES
 ***--LOAD COMPARISONS FROM SUBORDINATE FILES
 5 --SPECIFY NUMBER OF ATTRIBUTES
 6 --READ OLD ATTRIBUTE MATRIX FROM A FILE
 7 --ENTER (CHANGE) ATTRIBUTE NAMES
 ***--ENTER (CHANGE) (ADD) ATTRIBUTE COMPARISONS
 9 --ADD (CHANGE) PROJECT COMPARISONS
 10--DISPLAY PROJECT OR ATTRIBUTE MATRIX
 11--CALCULATE WEIGHTS
 12--HELP ON PROJECT RANKING INTERFACE
 13--RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF CHOICE(9)

0

SOURCE

1 d1a1a dat

1 d1a1a dat

2 d1a2a dat

2 d1a2a dat

2 d1a2a dat

2 d1a2a dat

25 **USER-ADDED PROJECT**

25 **USER-ADDED PROJECT**

MIT RETURN TO CONTINUE

PROJECT

2 pr2

3 pr3

3 pr3

4 pr4

5 pr5

0 new1

0 new2

NEW PROJECT NUMBER

1

2

3

4

5

6

7

MENU 1 + 1 HIERARCHY CONTINUED

0 --VERIFY FILE INPUT
 ***--RECALL ADDITIONAL PROJECTS
 2 --ADD NEW PROJECTS OF YOUR OWN
 3 --CHANGE PROJECT NAMES
 ***--LOAD COMPARISONS FROM SUBORDINATE FILES
 5 --SPECIFY NUMBER OF ATTRIBUTES
 6 --READ OLD ATTRIBUTE MATRIX FROM A FILE
 7 --ENTER (CHANGE) ATTRIBUTE NAMES
 ***--ENTER (CHANGE) (ADD) ATTRIBUTE COMPARISONS

139
275
322
366
423
440
457
455
471
493
500

MENU 1 ÷ 1 HIERARCHY CONTINUED

PLEASE ENTER NUMBER OF CHOICES

YOU ARE NOW ENTERING THE LINDO SYSTEM
WHEN ASKED IF YOU WISH TO DO A SENSITIVITY ANALYSIS, RESPOND WITH AN "N"
LP OPTIMUM FOUND AT STEP 1

WIDE RANGE (SENSITIVITY) ANALYSIS

ATTRIBUTE WEIGHTS

THE ATTRIBUTION OF LOVE

تاریخ ۱۳۸۵

1. The first part of the paper is devoted to the study of the properties of the function $f(x)$ defined by the equation

DISPLAY PROJECT WEIGHTS FOR EACH ATTRIBUTE>(Y/(N))

YOU ARE NOW ENTERING THE LINDO SYSTEM
WHEN ASKED IF YOU WISH TO DO A SENSITIVITY ANALYSIS, RESPOND WITH AN "N"
LP OPTIMUM FOUND AT STEP 24

DO RANGE(SENSITIVITY) ANALYSIS?

> n

FINAL WEIGHTS		
RANK	PROJECT # AND NAME	WEIGHT
1	1 pr2	0.63679248
2	2 pr3	0.21226415
3	3 pr3j	0.07075471
4	7 new2	0.04245283
5	5 pr3j	0.01886792
6	6 new1	0.01415094
7	4 pr3j	0.00471698

HIT RETURN TO CONTINUE

MENU 1 4 1 HIERARCHY CONTINUED

- 0 --VERIFY FILE INPUT
- 1 --RECALL ADDITIONAL PROJECTS
- 2 --ADD NEW PROJECTS OF YOUR OWN
- 3 --CHANGE PROJECT NAMES
- 4 --LOAD COMPARISONS FROM SUBORDINATE FILES
- 5 --SPECIFY NUMBER OF ATTRIBUTES
- 6 --READ OLD ATTRIBUTE MATRIX FROM A FILE
- 7 --ENTER (CHANGE) ATTRIBUTE NAMES
- 8 --ENTER (CHANGE) (ADD) ATTRIBUTE COMPARISONS
- 9 --ADD (CHANGE) PROJECT COMPARISONS
- 10 --DISPLAY PROJECT OR ATTRIBUTE MATRIX
- 11 --CALCULATE WEIGHTS
- 12 --HELP ON PROJECT RANKING INTERFACE
- 13 --RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF CHOICE(13)

MENU 0 0

- 0 --ENTER (CHANGE) HEADER INFORMATION
- 1 --EXECUTE BASIC MODEL
- 2 --EXECUTE ADDITIVE (ATTRIBUTES) MODEL
- 3 --EXECUTE VOTING MODEL
- 4 --EXECUTE HIERARCHY MODEL
- 5 --EXECUTE CONSTRAINTS MODEL
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --END PROGRAM, DELETE RESULTS
- 8 --END PROGRAM, SAVE(PRINT) RESULTS

PLEASE ENTER NUMBER OF YOUR CHOICE(8)

ENTER NAME OF OUTPUT FILE

11x04a.dat

NO COPY FOR A PRINTED COPY (Y/N) (N)

quit
FORTRAN STOP
* photo/off

OUTPUT FILE

=001NAME
 colburn
 =002ORGANIZATION
 dlab
 =003PURPOSE:
 combine results from two files using hierarchy model

=004MODEL TYPE (1-5):
 4
 =005NUMBER OF PROJECTS(1-200):
 7
 =006NUMBER OF ATTRIBUTES(1- 20):
 1
 =007NUMBER AND NAME OF ATTRIBUTES
 1 OVERALL WORTH
 999999
 =008ATTRIBUTE MATRIX (M X N WHERE N IS # OF ATTRIBUTES):
 1 00000000

999999
 =009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES):
 1 00000000
 =010NUMBER AND NAME OF PROJECTS:
 1 pr2
 2 pr3
 3 proj3
 4 proj4
 5 proj5
 6 new1
 7 new2

999999
 = 11PROJECT MATRIX FOR ATTRIBUTE # 1:
 1 00000000 3 00000000 9 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 5 00000000
 0 00000000 2 00000000 1 00000000 0 33333373 6 00000000 0 00000000
 0 00000000 3 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 4 00000000 1 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 5 00000000 1 00000000
 3 00000000 0 00000000 0 00000000 9 00000000 0 00000000 3 00000000
 999999
 = 12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES)
 0 63679248 0 21226415 0 07075471 0 00471598 0 01886792 0 01415094 0 04245283
 = 13FINAL PROJECT WEIGHTS (SAME ORDER AS NAMES)
 0 63679248 0 21226415 0 07075471 0 00471598 0 01886792 0 01415094 0 04245283
 999999

(5) CONSTRAINTS MODEL 5

INPUT FILE

Name: Colburn Input file name (if any): dlxbjo.dat

Organization: dlxb Name of output file to contain results: none

Purpose: Example of Model 5, Constraints Model

	CONSTRAINTS	UNITS	TOTAL RESOURCES
1	Costs	Thousands of Dollars	5000
2	Manpower	Man Months	100
3			
4			
5			
6			
7			
8			
9			
10			

Name: Colburn Input file name (if any): dlxb30.dat
 Organization: dlxb Name of output file to contain results: none
 Purpose: Example of Model 5, Constraints Model

PROJECT (OR ATTRIBUTE) NAME (UP TO 32 SPACES LONG)		1	2	3	4	5	6	7	8	9	10
1	PR1	2000	40								
2	PR2	750	30								
3	PR3	100	16								
4	PR4	2300	55								
5	PR5	500	19								
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											
23											
24											

```

-001NAME
  colburn
-002ORGANIZATION
  dlab
-003PURPOSE
  input to the constraints model

-004MODEL TYPE (1-5)
  1
-005NUMBER OF PROJECTS(1-200)
  5
-006NUMBER OF ATTRIBUTES(1- 20)
  1
-007NUMBER AND NAME OF ATTRIBUTES
  1 OVERALL WORTH

999999
-008ATTRIBUTE MATRIX (N X N WHERE N IS # OF ATTRIBUTES)
999999 1 00000000
-009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES)
  0 00000000
-010NUMBER AND NAME OF PROJECTS
  1 pr1
  2 pr2
  3 pr3
  4 pr4
  5 pr5

999999
- 11PROJECT MATRIX FOR ATTRIBUTE # 1
  1 00000000 0 00000000 0 00000000 0 00000000 4 00000000
  3 00000000 1 00000000 5 00000000 0 00000000 0 00000000
  0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
  0 00000000 0 00000000 0 00000000 1 00000000 3 00000000
  0 00000000 0 00000000 0 00000000 0 00000000 1 00000000

999999
- 12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES)
  0 17837143 0 53571427 0 10714287 0 13392857 0 04464286
- 13FINAL PROJECT WEIGHTS (SAME ORDER AS NAMES)
  0 17837143 0 53571427 0 10714287 0 13392857 0 04464286

999999

```

EXECUTED RUN

%PHOTO-I-INIT, Recording initiated at 22 48 26 14
 \$ linfo
 LINDO (UC 6 DEC 82)
 user

LINDO USER INTERFACE
 FOR PROJECT RANKING
 MENU 0.0

- 0 --ENTER (CHANGE) HEADER INFORMATION
- 1 --EXECUTE BASIC MODEL
- 2 --EXECUTE ADDITIVE (ATTRIBUTES) MODEL
- 3 --EXECUTE VOTING MODEL
- 4 --EXECUTE HIERARCHY MODEL
- 5 --EXECUTE CONSTRAINTS MODEL
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --END PROGRAM, DELETE RESULTS
- 8 --END PROGRAM, SAVE(PRINT) RESULTS

PLEASE ENTER NUMBER OF YOUR CHOICE(0):

PLEASE ENTER YOUR NAME:

colburn
 ORGANIZATION (DLX, DLXB, ETC)
 dlxb

PURPOSE (IF THIS FILE IS OFFICIAL, SO STATE.)
 ENTER A MAXIMUM OF FIVE LINES, ENTERING A BLANK LINE
 TO QUIT BEFORE FIVE LINES

decide which projects to fund.

projects have already been rank weighted

MENU 0.0

- 0 --ENTER (CHANGE) HEADER INFORMATION
- 1 --EXECUTE BASIC MODEL
- 2 --EXECUTE ADDITIVE (ATTRIBUTES) MODEL
- 3 --EXECUTE VOTING MODEL
- 4 --EXECUTE HIERARCHY MODEL
- 5 --EXECUTE CONSTRAINTS MODEL
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --END PROGRAM, DELETE RESULTS
- 8 --END PROGRAM, SAVE(PRINT) RESULTS

PLEASE ENTER NUMBER OF YOUR CHOICE(1):

5

MENU 1.5 -- CONSTRAINTS MODEL

- 0 --ENTER PROJECTS AND WEIGHTS
- 1 --READ PROJECTS AND WEIGHTS FROM A FILE
- 2 --ENTER CONSTRAINTS
- ** --ENTER RESOURCE REQUIREMENTS FOR PROJECTS
- ** --CALCULATE WHICH PROJECTS ARE TO BE FUNDED
- 5 --VIEW PROJECT WEIGHTS AND NAMES

```

6  --HELP WITH PROJECT RANKING INTERFACE
7  --RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF YOUR CHOICE ( 0 )

1
PLEASE INPUT NAME OF FILE
j11030.dat

```

MENU 1.5 -- CONSTRAINTS MODEL

```

0  --ENTER PROJECTS AND WEIGHTS
1  --READ PROJECTS AND WEIGHTS FROM A FILE
2  --ENTER CONSTRAINTS
**  --ENTER RESOURCE REQUIREMENTS FOR PROJECTS
**  --CALCULATE WHICH PROJECTS ARE TO BE FUNDED
5  --VIEW PROJECT WEIGHTS AND NAMES
6  --HELP WITH PROJECT RANKING INTERFACE
7  --RETURN TO MAIN MENU

```

PLEASE ENTER NUMBER OF YOUR CHOICE (2) :

PROJECT	WEIGHTS
1 pr1	0.17857143
2 pr2	0.53571427
3 pr3	0.10714287
4 pr4	0.13392857
5 pr5	0.04464286

HIT (RETURN) TO CONTINUE

12

MENU 1.5 -- CONSTRAINTS MODEL

```

0  --ENTER PROJECTS AND WEIGHTS
1  --READ PROJECTS AND WEIGHTS FROM A FILE
2  --ENTER CONSTRAINTS
**  --ENTER RESOURCE REQUIREMENTS FOR PROJECTS
**  --CALCULATE WHICH PROJECTS ARE TO BE FUNDED
5  --VIEW PROJECT WEIGHTS AND NAMES
6  --HELP WITH PROJECT RANKING INTERFACE
7  --RETURN TO MAIN MENU

```

PLEASE ENTER NUMBER OF YOUR CHOICE (2) :

ENTER NAME OF CONSTRAINT # 1. BLANK TO QUIT

costs

ENTER UNITS OF CONSTRAINT # 1

thousands of dollars

ENTER TOTAL AMOUNT OF AVAILABLE costs

IN UNITS OF thousands of dollars

5000

ENTER NAME OF CONSTRAINT # 2. BLANK TO QUIT

manpower

ENTER UNITS OF CONSTRAINT # 2

man months

ENTER TOTAL AMOUNT OF AVAILABLE manpower
IN UNITS OF man months

100

ENTER NAME OF CONSTRAINT # 3. BLANK TO QUIT

MENU 1.5 -- CONSTRAINTS MODEL

- 0 --ENTER PROJECTS AND WEIGHTS
- 1 --READ PROJECTS AND WEIGHTS FROM A FILE
- 2 --ENTER CONSTRAINTS
- 3 --ENTER RESOURCE REQUIREMENTS FOR PROJECTS
- ** --CALCULATE WHICH PROJECTS ARE TO BE FUNDED
- 5 --VIEW PROJECT WEIGHTS AND NAMES
- 6 --HELP WITH PROJECT RANKING INTERFACE
- 7 --RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF YOUR CHOICE (3) :

FOR PROJECT # 1-pr1	ENTER
REQUIREMENT OF costs	IN thousands of dollars
2000	
REQUIREMENT OF manpower	IN man months
40	
FOR PROJECT # 2-pr2	ENTER
REQUIREMENT OF costs	IN thousands of dollars
750	
REQUIREMENT OF manpower	IN man months
30	
FOR PROJECT # 3-pr3	ENTER
REQUIREMENT OF costs	IN thousands of dollars
100	
REQUIREMENT OF manpower	IN man months
16	
FOR PROJECT # 4-pr4	ENTER
REQUIREMENT OF costs	IN thousands of dollars
2300	
REQUIREMENT OF manpower	IN man months
55	
FOR PROJECT # 5-pr5	ENTER
REQUIREMENT OF costs	IN thousands of dollars
500	
REQUIREMENT OF manpower	IN man months
19	

MENU 1.5 -- CONSTRAINTS MODEL

- 0 --ENTER PROJECTS AND WEIGHTS
- 1 --READ PROJECTS AND WEIGHTS FROM A FILE
- 2 --ENTER CONSTRAINTS
- 3 --ENTER RESOURCE REQUIREMENTS FOR PROJECTS
- 4 --CALCULATE WHICH PROJECTS ARE TO BE FUNDED
- 5 --VIEW PROJECT WEIGHTS AND NAMES
- 6 --HELP WITH PROJECT RANKING INTERFACE

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%RMS-E-FLK. file currently locked by another user
%RMS-F-IFL. invalid internal file identifier (IFI) value
* photo/off

f. COMPOSITE EXAMPLE

(1) Flow Diagram

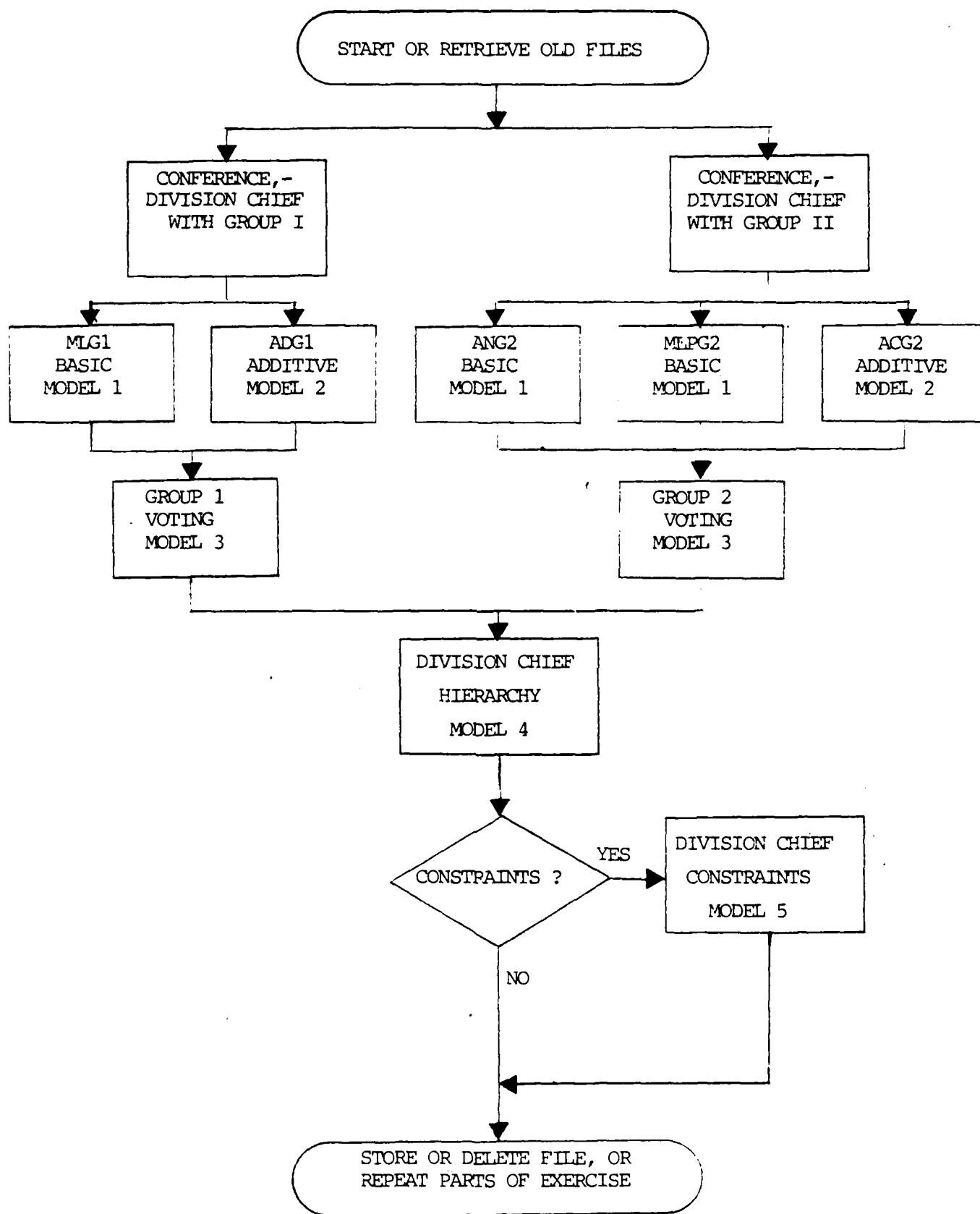


Figure A-7. (1) Flow Diagram.

Input, Executed Runs and Output

Input, Executed Runs, and Output using the BASIC Model for Person 1.

INPUT FILE

EXECUTED RUN

%PHOTO-I-INIT, Recording initiated at 23:07:50 63
 \$ linfo
 LINFO (UC 6 DEC 82)
 user

LINDO USER INTERFACE
 FOR PROJECT RANKING
 MENU 0 0

- 0 --ENTER (CHANGE) HEADER INFORMATION
- 1 --EXECUTE BASIC MODEL
- 2 --EXECUTE ADDITIVE (ATTRIBUTES) MODEL
- 3 --EXECUTE VOTING MODEL
- 4 --EXECUTE HIERARCHY MODEL
- 5 --EXECUTE CONSTRAINTS MODEL
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --END PROGRAM, DELETE RESULTS
- 8 --END PROGRAM, SAVE(PRINT) RESULTS

PLEASE ENTER NUMBER OF YOUR CHOICE(0):

PLEASE ENTER YOUR NAME:

man j

ORGANIZATION (DLX, DLX9, ETC):

dlx9

PURPOSE (IF THIS FILE IS OFFICIAL, SO STATE)
 ENTER A MAXIMUM OF FIVE LINES, ENTERING A BLANK LINE
 TO QUIT BEFORE FIVE LINES
 compare four projects

MENU 0 0

- 0 --ENTER (CHANGE) HEADER INFORMATION
- 1 --EXECUTE BASIC MODEL
- 2 --EXECUTE ADDITIVE (ATTRIBUTES) MODEL
- 3 --EXECUTE VOTING MODEL
- 4 --EXECUTE HIERARCHY MODEL
- 5 --EXECUTE CONSTRAINTS MODEL
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --END PROGRAM, DELETE RESULTS
- 8 --END PROGRAM, SAVE(PRINT) RESULTS

PLEASE ENTER NUMBER OF YOUR CHOICE(1):

MENU 1 1 -- BASIC MODEL

- 0 --SPECIFY NUMBER OF PROJECTS
- 1 --READ OLD PROJECT MATRIX FROM FILE
- 2 --ENTER (CHANGE) PROJECT NAMES
- 3 --ENTER (CHANGE) (ADD) PROJECT COMPARISONS
- 4 --DISPLAY COMPARISONS
- 5 --CALCULATE HEIGHTS
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF YOUR CHOICE (2)

ENTER PROJECT NAMES QUIT WITH A BLANK LINE

```
#1
pr1
#
# 2
pr2
#
# 3
pr3
#
# 4
pr4
#
# 5
```

MENU 1 1 -- BASIC MODEL

- 0 --SPECIFY NUMBER OF PROJECTS
- 1 --READ OLD PROJECT MATRIX FROM FILE
- 2 --ENTER (CHANGE) PROJECT NAMES
- 3 --ENTER (CHANGE) (ADD) PROJECT COMPARISONS
- 4 --DISPLAY COMPARISONS
- 5 --CALCULATE WEIGHTS
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF YOUR CHOICE (3).

ENTER COMPARISONS IN THE FORM ROW COLUMN COMPARISON
ENTER ZEROS TO QUIT

```
1 2 3
3 1 4
3 4 2
0 0 0
```

MENU 1 1 -- BASIC MODEL

- 0 --SPECIFY NUMBER OF PROJECTS
- 1 --READ OLD PROJECT MATRIX FROM FILE
- 2 --ENTER (CHANGE) PROJECT NAMES
- 3 --ENTER (CHANGE) (ADD) PROJECT COMPARISONS
- 4 --DISPLAY COMPARISONS
- 5 --CALCULATE WEIGHTS
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF YOUR CHOICE (5).

YOU ARE NOW ENTERING THE LINDO SYSTEM
WHEN ASKED IF YOU WISH TO DO A SENSITIVITY ANALYSIS, RESPOND WITH AN "N"
LP OPTIMUM FOUND AT STEP 4

DO RAISE (SENSITIVITY) ANALYSIS?

RANK	PROJECT #	AND NAME	WEIGHT
1	3	pr3	0.54545456
2	4	pr4	0.27272728
3	1	pr1	0.13636364
4	2	pr2	0.04545455

OBJ = 0.0000 INDEX = 0.0000 --CONSISTENT
VIEW DELTA MATRIX (Y/N)

MENU 1.1 -- BASIC MODEL

- 0 --SPECIFY NUMBER OF PROJECTS
- 1 --READ OLD PROJECT MATRIX FROM FILE
- 2 --ENTER (CHANGE) PROJECT NAMES
- 3 --ENTER (CHANGE) (ADD) PROJECT COMPARISONS
- 4 --DISPLAY COMPARISONS
- 5 --CALCULATE WEIGHTS
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF YOUR CHOICE (7)

MENU 0.0

- 0 --ENTER (CHANGE) HEADER INFORMATION
- 1 --EXECUTE BASIC MODEL
- 2 --EXECUTE ADDITIVE (ATTRIBUTES) MODEL
- 3 --EXECUTE VOTING MODEL
- 4 --EXECUTE HIERARCHY MODEL
- 5 --EXECUTE CONSTRAINTS MODEL
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --END PROGRAM, DELETE RESULTS
- 8 --END PROGRAM, SAVE (PRINT) RESULTS

PLEASE ENTER NUMBER OF YOUR CHOICE(8)

ENTER NAME OF OUTPUT FILE

diablo.dat

WOULD YOU CARE FOR A PRINTED COPY (Y/N) ? (N)

quit

FORTRAN STOP

\$ lingo

LINDO (UC 6 DEC 82)

user

OUTPUT FILE

```

=001NAME
  man 1
=002ORGANIZATION
  dis
=003PURPOSE
  compare four projects

=004MODEL TYPE (1-3):
  1
=005NUMBER OF PROJECTS(1-200):
  4
=006NUMBER OF ATTRIBUTES(1- 20)
  1
=007NUMBER AND NAME OF ATTRIBUTES
  1 OVERALL NORTH

999999
=008ATTRIBUTE MATRIX (N X N WHERE N IS # OF ATTRIBUTES)
  1 00000000
999999
=009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES):
  0 0000000
=010NUMBER AND NAME OF PROJECTS
  1 pr1
  2 pr2
  3 pr3
  4 pr4

999999
= 11PROJECT MATRIX FOR ATTRIBUTE # 1
  1 00000000 3 00000000 0 00000000 0 00000000
  0 00000000 1 00000000 0 00000000 0 00000000
  4 00000000 0 00000000 1 00000000 2 00000000
  0 00000000 0 00000000 0 00000000 1 00000000
999999
= 12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES)
  0 13636364 0 04545455 0 54545456 0 27272728
= 13FINAL PROJECT WEIGHTS (SAME ORDER AS NAMES)
  0 13636364 0 04545455 0 54545456 0 27272728
999999

```

Input, Executed Runs, and Output using the ADDITIVE Model for Person 2

INPUT FILE

none

d1xb2o.dat

quid

Name of output file to contain results:

Name of output file to contain results:

Name of output file to contain
Name of attribute (if any):

[illegible]

d1xb20.dat

ATTI

150

...

11

Pyrg0030: Compo

COMMENTS

[illegible]

EXECUTED RUN

LINDO USER INTERFACE
FOR PROJECT RANKING
MENU 0 0

- 0 --ENTER (CHANGE) HEADER INFORMATION
- 1 --EXECUTE BASIC MODEL
- 2 --EXECUTE ADDITIVE (ATTRIBUTES) MODEL
- 3 --EXECUTE VOTING MODEL
- 4 --EXECUTE HIERARCHY MODEL
- 5 --EXECUTE CONSTRAINTS MODEL
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --END PROGRAM, DELETE RESULTS
- 8 --END PROGRAM, SAVE(PRINT) RESULTS

PLEASE ENTER NUMBER OF YOUR CHOICE(0):

PLEASE ENTER YOUR NAME:

man 2

ORGANIZATION (DLX, DLXB, ETC):

dlxb

PURPOSE (IF THIS FILE IS OFFICIAL, SO STATE.)
ENTER A MAXIMUM OF FIVE LINES. ENTERING A BLANK LINE
TO QUIT BEFORE FIVE LINES
to compare 4 projects

MENU 0.0

- 0 --ENTER (CHANGE) HEADER INFORMATION
- 1 --EXECUTE BASIC MODEL
- 2 --EXECUTE ADDITIVE (ATTRIBUTES) MODEL
- 3 --EXECUTE VOTING MODEL
- 4 --EXECUTE HIERARCHY MODEL
- 5 --EXECUTE CONSTRAINTS MODEL
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --END PROGRAM, DELETE RESULTS
- 8 --END PROGRAM, SAVE(PRINT) RESULTS

PLEASE ENTER NUMBER OF YOUR CHOICE(1)

2

MENU 1.2--ADDITIVE (ATTRIBUTES) MODEL

- 0 --SPECIFY NUMBER OF ATTRIBUTES
- 1 --READ OLD ATTRIBUTES MATRIX FROM FILE
- 2 --SPECIFY NUMBER OF PROJECTS
- 3 --READ OLD PROJECT MATRIX FROM FILE
- 4 --ENTER (CHANGE) ATTRIBUTE NAMES
- 5 --ENTER (CHANGE) PROJECT NAMES
- 6 --ENTER (CHANGE) (ADD) ATTRIBUTE COMPARISONS
- 7 --ENTER (CHANGE) (ADD) PROJECT COMPARISONS
- 8 --VIEW PROJECT OR ATTRIBUTE COMPARISONS
- 9 --CALCULATE ATTRIBUTE AND PROJECT WEIGHTS
- 10 --HELP WITH PROJECT RANKING INTERFACE
- 11 --RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF YOUR CHOICE (4)

ENTER ATTRIBUTE NAMES QUIT WITH A BLANK LINE

#1
att1 2

att2 3

att3 4

att4 5
#

MENU 1.2--ADDITIVE (ATTRIBUTES) MODEL

0 --SPECIFY NUMBER OF ATTRIBUTES
1 --READ OLD ATTRIBUTES MATRIX FROM FILE
2 --SPECIFY NUMBER OF PROJECTS
3 --READ OLD PROJECT MATRIX FROM FILE
4 --ENTER (CHANGE) ATTRIBUTE NAMES
5 --ENTER (CHANGE) PROJECT NAMES
6 --ENTER (CHANGE) (ADD) ATTRIBUTE COMPARISONS
7 --ENTER (CHANGE) (ADD) PROJECT COMPARISONS
8 --VIEW PROJECT OR ATTRIBUTE COMPARISONS
***--CALCULATE ATTRIBUTE AND PROJECT WEIGHTS
10--HELP WITH PROJECT RANKING INTERFACE
11--RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF YOUR CHOICE (6)

ATTRIBUTE COMPARISONS

ENTER COMPARISONS IN THE FORM ROW COLUMN COMPARISON
ENTER ZEROS TO QUIT

1 2 3
1 3 4
1 4 2
2 3 7
3 4 8
0 0 0

MENU 1.2--ADDITIVE (ATTRIBUTES) MODEL

0 --SPECIFY NUMBER OF ATTRIBUTES
1 --READ OLD ATTRIBUTES MATRIX FROM FILE
2 --SPECIFY NUMBER OF PROJECTS
3 --READ OLD PROJECT MATRIX FROM FILE
4 --ENTER (CHANGE) ATTRIBUTE NAMES
5 --ENTER (CHANGE) PROJECT NAMES
6 --ENTER (CHANGE) (ADD) ATTRIBUTE COMPARISONS
7 --ENTER (CHANGE) (ADD) PROJECT COMPARISONS
8 --VIEW PROJECT OR ATTRIBUTE COMPARISONS
***--CALCULATE ATTRIBUTE AND PROJECT WEIGHTS
10--HELP WITH PROJECT RANKING INTERFACE
11--RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF YOUR CHOICE (5)

ENTER PROJECT NAMES QUIT WITH A BLANK LINE

#1
pr1
2
pr2
3
pr3
4
pr4
5

MENU 1.2--ADDITIVE (ATTRIBUTES) MODEL

0 --SPECIFY NUMBER OF ATTRIBUTES
1 --READ OLD ATTRIBUTES MATRIX FROM FILE
2 --SPECIFY NUMBER OF PROJECTS
3 --READ OLD PROJECT MATRIX FROM FILE
4 --ENTER (CHANGE) ATTRIBUTE NAMES
5 --ENTER (CHANGE) PROJECT NAMES
6 --ENTER (CHANGE) (ADD) ATTRIBUTE COMPARISONS
7 --ENTER (CHANGE) (ADD) PROJECT COMPARISONS
8 --VIEW PROJECT OR ATTRIBUTE COMPARISONS
9 --CALCULATE ATTRIBUTE AND PROJECT WEIGHTS
10--HELP WITH PROJECT RANKING INTERFACE
11--RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF YOUR CHOICE. (7)

WITH RESPECT TO ATTRIBUTE 1 att1
ENTER COMPARISONS IN THE FORM ROW COLUMN COMPARISON
ENTER ZEROS TO QUIT.

1 2 3
1 3 1
4 3 5
4 2 4
0 0 0

WITH RESPECT TO ATTRIBUTE 2 att2
ENTER COMPARISONS IN THE FORM ROW COLUMN COMPARISON
ENTER ZEROS TO QUIT

1 2 3
1 3 4
1 4 5
0 0 0

WITH RESPECT TO ATTRIBUTE 3 att3
ENTER COMPARISONS IN THE FORM ROW COLUMN COMPARISON
ENTER ZEROS TO QUIT

2 1 4
3 1 4
4 1 2
0 0 0

WITH RESPECT TO ATTRIBUTE 4 att4
ENTER COMPARISONS IN THE FORM ROW COLUMN COMPARISON
ENTER ZEROS TO QUIT

1 2 3
2 3 4
4 2 3
1 3 5
0 0 0

MENU 1.2--ADDITIVE (ATTRIBUTES) MODEL

```

0 --SPECIFY NUMBER OF ATTRIBUTES
1 --READ OLD ATTRIBUTES MATRIX FROM FILE
2 --SPECIFY NUMBER OF PROJECTS
3 --READ OLD PROJECT MATRIX FROM FILE
4 --ENTER (CHANGE) ATTRIBUTE NAMES
5 --ENTER (CHANGE) PROJECT NAMES
6 --ENTER (CHANGE) (ADD) ATTRIBUTE COMPARISONS
7 --ENTER (CHANGE) (ADD) PROJECT COMPARISONS
8 --VIEW PROJECT OR ATTRIBUTE COMPARISONS
9 --CALCULATE ATTRIBUTE AND PROJECT WEIGHTS
10--HELP WITH PROJECT RANKING INTERFACE
11--RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF YOUR CHOICE [ 9 ].

YOU ARE NOW ENTERING THE LINDO SYSTEM
WHEN ASKED IF YOU WISH TO DO A SENSITIVITY ANALYSIS, RESPOND WITH AN "N"
LP OPTIMUM FOUND AT STEP 9

DO RANGE(SENSITIVITY) ANALYSIS?
> n
ATTRIBUTE WEIGHTS

RANK ATTRIBUTE # AND NAME WEIGHT
1 1 att1 0.72103006
2 2 att2 0.24034335
3 3 att3 0.03433476
4 4 att4 0.00429185

OBJ= 1.2961, INDEX= 0.3240--SOME CONSISTENCY
VIEW DELTA MATRIX (Y/(N))>

DISPLAY PROJECT WEIGHTS FOR EACH ATTRIBUTE?(Y/(N))
Y
YOU ARE NOW ENTERING THE LINDO SYSTEM
WHEN ASKED IF YOU WISH TO DO A SENSITIVITY ANALYSIS, RESPOND WITH AN "N"
LP OPTIMUM FOUND AT STEP 5

DO RANGE(SENSITIVITY) ANALYSIS?
> n
WITH RESPECT TO ATTRIBUTE 1 att1
RANK PROJECT # AND NAME WEIGHT
1 4 pr4 0.45454544
2 1 pr1 0.34090909
3 2 pr2 0.11363636
4 3 pr3 0.09090909

OBJ= 0.2500, INDEX= 0.0625--CONSISTENT
VIEW DELTA MATRIX(Y/(N))>

YOU ARE NOW ENTERING THE LINDO SYSTEM
WHEN ASKED IF YOU WISH TO DO A SENSITIVITY ANALYSIS, RESPOND WITH AN "N"
LP OPTIMUM FOUND AT STEP 4

```

DO RANGE(SENSITIVITY) ANALYSIS?

> n

WITH RESPECT TO ATTRIBUTE 2 att2

RANK	PROJECT # AND NAME	WEIGHT
1	1 pr1	0.56074768
2	2 pr2	0.18691589
3	3 pr3	0.14018692
4	4 pr4	0.11214954

OBJ= 0.0000, INDEX= 0.0000---CONSISTENT
VIEW DELTA MATRIX(Y/(N))?

YOU ARE NOW ENTERING THE LINDO SYSTEM

WHEN ASKED IF YOU WISH TO DO A SENSITIVITY ANALYSIS, RESPOND WITH AN "N"
LP OPTIMUM FOUND AT STEP 4

DO RANGE(SENSITIVITY) ANALYSIS?

> n

WITH RESPECT TO ATTRIBUTE 3 att3

RANK	PROJECT # AND NAME	WEIGHT
1	2 pr2	0.36363637
1	3 pr3	0.36363637
3	4 pr4	0.18181819
4	1 pr1	0.09090909

OBJ= 0.0000, INDEX= 0.0000---CONSISTENT
VIEW DELTA MATRIX(Y/(N))?

YOU ARE NOW ENTERING THE LINDO SYSTEM

WHEN ASKED IF YOU WISH TO DO A SENSITIVITY ANALYSIS, RESPOND WITH AN "N"
LP OPTIMUM FOUND AT STEP 5

DO RANGE(SENSITIVITY) ANALYSIS?

> n

WITH RESPECT TO ATTRIBUTE 4 att4

RANK	PROJECT # AND NAME	WEIGHT
1	1 pr1	0.40000001
1	4 pr4	0.40000001
3	2 pr2	0.13333334
4	3 pr3	0.06666667

OBJ= 0.1333, INDEX= 0.0333---CONSISTENT
VIEW DELTA MATRIX(Y/(N))?

FINAL WEIGHTS

RANK	PROJECT # AND NAME	WEIGHT
1	1 pr1	0.38541576
2	4 pr4	0.36265475
3	2 pr2	0.13991685
4	3 pr3	0.11201268

HIT RETURN TO CONTINUE

MENU 1 2--ADDITIVE (ATTRIBUTES) MODEL

- 0 --SPECIFY NUMBER OF ATTRIBUTES
- 1 --READ OLD ATTRIBUTES MATRIX FROM FILE
- 2 --SPECIFY NUMBER OF PROJECTS
- 3 --READ OLD PROJECT MATRIX FROM FILE
- 4 --ENTER (CHANGE) ATTRIBUTE NAMES
- 5 --ENTER (CHANGE) PROJECT NAMES
- 6 --ENTER (CHANGE) (ADD) ATTRIBUTE COMPARISONS
- 7 --ENTER (CHANGE) (ADD) PROJECT COMPARISONS
- 8 --VIEW PROJECT OR ATTRIBUTE COMPARISONS
- 9 --CALCULATE ATTRIBUTE AND PROJECT WEIGHTS
- 10--HELP WITH PROJECT RANKING INTERFACE
- 11--RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF YOUR CHOICE (11)

MENU 0 0

- 0 --ENTER (CHANGE), HEADER INFORMATION
- 1 --EXECUTE BASIC MODEL
- 2 --EXECUTE ADDITIVE (ATTRIBUTES) MODEL
- 3 --EXECUTE VOTING MODEL
- 4 --EXECUTE HIERARCHY MODEL
- 5 --EXECUTE CONSTRAINTS MODEL
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --END PROGRAM, DELETE RESULTS
- 8 --END PROGRAM, SAVE(PRINT) RESULTS

PLEASE ENTER NUMBER OF YOUR CHOICE(8)

ENTER NAME OF OUTPUT FILE
dlab2o.dat
WOULD YOU CARE FOR A PRINTED COPY (Y/N) > (N)

quit
FORTRAN STOP
\$ linfo
LINFO (UC 6 DEC 82)
user

OUTPUT FILE

```

=001NAME
  man 2
=002ORGANIZATION
  d1b
=003PURPOSE
  to compare 4 projects

=004MODEL TYPE (1-5)
  2
=005NUMBER OF PROJECTS(1-200)
  4
=006NUMBER OF ATTRIBUTES(1- 20)
  4
=007NUMBER AND NAME OF ATTRIBUTES
  1 att1
  2 att2
  3 att3
  4 att4

999999
=008ATTRIBUTE MATRIX (M X N WHERE N IS # OF ATTRIBUTES)
  1 00000000 3 00000000 4 00000000 2 00000000
  0 00000000 1 00000000 7 00000000 0 00000000
  0 00000000 0 00000000 1 00000000 8 00000000
  0 00000000 0 00000000 0 00000000 1 00000000

779999
=009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES):
  0 72103006 0 24034335 0 03433476 0 00429185
=010NUMBER AND NAME OF PROJECTS
  1 pr1
  2 pr2
  3 pr3
  4 pr4

999999
= 11PROJECT MATRIX FOR ATTRIBUTE # 1
  1 00000000 3 00000000 1 00000000 0 00000000
  0 00000000 1 00000000 0 00000000 0 00000000
  0 00000000 0 00000000 1 00000000 0 00000000
  0 00000000 4 00000000 5 00000000 1 00000000

999999
= 12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES)
  0 34090909 0 11363636 0 09090909 0 45454544
= 13PROJECT MATRIX FOR ATTRIBUTE # 2
  1 00000000 3 00000000 4 00000000 5 00000000
  0 00000000 1 00000000 0 00000000 0 00000000
  0 00000000 0 00000000 1 00000000 0 00000000
  0 00000000 0 00000000 0 00000000 1 00000000

999999
= 14PROJECT WEIGHTS FOR ATTRIBUTE # 3(SAME ORDER AS NAMES)
  0 56074768 0 18491589 0 14018692 0 11214954
= 15PROJECT MATRIX FOR ATTRIBUTE # 3
  1 00000000 0 00000000 0 00000000 0 00000000
  4 00000000 1 00000000 0 00000000 0 00000000
  4 00000000 0 00000000 1 00000000 0 00000000
  2 00000000 0 00000000 0 00000000 1 00000000

779999
=16PROJECT WEIGHTS FOR ATTRIBUTE # 4(SAME ORDER AS NAMES)

```

```

0 09090909 0 36363637 0 36363637 0 18181819
= 1/PROJECT MATRIX FOR ATTRIBUTE # 4
1 00000000 3 00000000 4 00000000 0 00000000
0 00000000 1 00000000 4 00000000 0 00000000
0 00000000 0 00000000 1 00000000 0 00000000
0 00000000 3 00000000 0 00000000 1 00000000
999999
= 18PROJECT WEIGHTS FOR ATTRIBUTE # 4 (SAME ORDER AS NAMES)
0 40000001 0 13333334 0 06666667 0 40000001
= 19FINAL PROJECT WEIGHTS (SAME ORDER AS NAMES)
0 38541576 0 13991695 0 11201268 0 36265475
999999

```

Input, Executed Run, and Output Using the BASIC Model for Person 3.

INPUT FILE

Name: Man 3 Input file name (if any): none
 Organization: dlxb Name of output file to contain results: dlxb130.dat
 Purpose: Composite example, Basic Model Name of attribute (if any): overall worth

Project or Project (or Attribute) Comparisons																								
Attribute Name	Attribute Name																							
for File	for File																							
(up to 32 spaces long)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1 PROJ1	1	3	3	5																				
2 PROJ2	1	4																						
3 PROJ3	1	5																						
4 PROJ4	1	2																						
5 PROJ5	6																							
6																								
7																								
8																								
9																								
10																								
11																								
12																								
13																								
14																								
15																								
16																								
17																								
18																								
19																								
20																								
21																								
22																								
23																								
24																								

EXECUTED RUN

LINDO USER INTERFACE
FOR PROJECT RANKING
MENU 0 0

- 0 --ENTER (CHANGE) HEADER INFORMATION
- 1 --EXECUTE BASIC MODEL
- 2 --EXECUTE ADDITIVE (ATTRIBUTES) MODEL
- 3 --EXECUTE VOTING MODEL
- 4 --EXECUTE HIERARCHY MODEL
- 5 --EXECUTE CONSTRAINTS MODEL
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --END PROGRAM, DELETE RESULTS
- 8 --END PROGRAM, SAVE (PRINT) RESULTS

PLEASE ENTER NUMBER OF YOUR CHOICE(0)

PLEASE ENTER YOUR NAME

man 3

ORGANIZATION (DLX, DLXB, ETC)

dlab

PURPOSE (IF THIS FILE IS OFFICIAL, SO STATE)
ENTER A MAXIMUM OF FIVE LINES, ENTERING A BLANK LINE
TO QUIT BEFORE FIVE LINES
to compare 3 projects

MENU 0 0

- 0 --ENTER (CHANGE) HEADER INFORMATION
- 1 --EXECUTE BASIC MODEL
- 2 --EXECUTE ADDITIVE (ATTRIBUTES) MODEL
- 3 --EXECUTE VOTING MODEL
- 4 --EXECUTE HIERARCHY MODEL
- 5 --EXECUTE CONSTRAINTS MODEL
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --END PROGRAM, DELETE RESULTS
- 8 --END PROGRAM, SAVE (PRINT) RESULTS

PLEASE ENTER NUMBER OF YOUR CHOICE(1)

MENU 1 1 -- BASIC MODEL

- 0 --SPECIFY NUMBER OF PROJECTS
- 1 --READ OLD PROJECT MATRIX FROM FILE
- 2 --ENTER (CHANGE) PROJECT NAMES
- ##--ENTER (CHANGE) (ADD) PROJECT COMPARISONS
- 4 --DISPLAY COMPARISONS
- ##--CALCULATE WEIGHTS
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF YOUR CHOICE (2).
 ENTER PROJECT NAMES QUIT WITH A BLANK LINE

```
#1
proj1 2
#
proj2 3
#
proj3 4
#
proj4 5
#
proj5 6
#
```

MENU 1 1 -- BASIC MODEL

- 0 --SPECIFY NUMBER OF PROJECTS
- 1 --READ OLD PROJECT MATRIX FROM FILE
- 2 --ENTER (CHANGE) PROJECT NAMES
- 3 --ENTER (CHANGE) (ADD) PROJECT COMPARISONS
- 4 --DISPLAY COMPARISONS
- 5 --CALCULATE WEIGHTS
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF YOUR CHOICE (3).

ENTER COMPARISONS IN THE FORM ROW COLUMN COMPARISON
 ENTER ZEROS TO QUIT.

```
1 2 3
2 3 4
3 4 5
4 5 2
5 1 6
1 3 3
1 4 5
0 0 0
```

MENU 1 1 -- BASIC MODEL

- 0 --SPECIFY NUMBER OF PROJECTS
- 1 --READ OLD PROJECT MATRIX FROM FILE
- 2 --ENTER (CHANGE) PROJECT NAMES
- 3 --ENTER (CHANGE) (ADD) PROJECT COMPARISONS
- 4 --DISPLAY COMPARISONS
- 5 --CALCULATE WEIGHTS
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF YOUR CHOICE (5)

YOU ARE NOW ENTERING THE LINDO SYSTEM
 WHEN ASKED IF YOU WISH TO DO A SENSITIVITY ANALYSIS. RESPOND WITH AN "N"
 LP OPTIMUM FOUND AT STEP 8

DO RANGE(SENSITIVITY) ANALYSIS:

NAME	PROJECT #	AND NAME	UP/DOWN

1	3	proj3	0 76271182
2	1	proj1	0 12711865
3	3	proj3	0 04237288
3	2	proj2	0 04237288
5	4	proj4	0 02542373

OBJ= 1 7119, INDEX= 0 3424--SOME CONSISTENCY
VIEW DELTA MATRIX (Y/N)?

MENU 1 1 -- BASIC MODEL

- 0 --SPECIFY NUMBER OF PROJECTS
- 1 --READ OLD PROJECT MATRIX FROM FILE
- 2 --ENTER (CHANGE) PROJECT NAMES
- 3 --ENTER (CHANGE) (ADD) PROJECT COMPARISONS
- 4 --DISPLAY COMPARISONS
- 5 --CALCULATE WEIGHTS
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF YOUR CHOICE (7):

MENU 0 0

- 0 --ENTER (CHANGE) HEADER INFORMATION
- 1 --EXECUTE BASIC MODEL
- 2 --EXECUTE ADDITIVE (ATTRIBUTES) MODEL
- 3 --EXECUTE VOTING MODEL
- 4 --EXECUTE HIERARCHY MODEL
- 5 --EXECUTE CONSTRAINTS MODEL
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --END PROGRAM, DELETE RESULTS
- 8 --END PROGRAM, SAVE(PRINT) RESULTS

PLEASE ENTER NUMBER OF YOUR CHOICE(8)

ENTER NAME OF OUTPUT FILE

dirbjo.dat

WOULD YOU CARE FOR A PRINTED COPY (Y/N) ? [N]

quit

FORTRAN STOP

\$ linfo

LINFO (WC 6 DEC 82)

user

OUTPUT FILE

```

=001NAME
  man 3
=002ORGANIZATION
  d1b
=003PURPOSE
  to compare 3 projects

=004MODEL TYPE (1-5)
  1
=005NUMBER OF PROJECTS(1-200)
  5
=006NUMBER OF ATTRIBUTES(1- 25)
  1
=007NUMBER AND NAME OF ATTRIBUTES
  1 OVERALL WORTH

999999
=008ATTRIBUTE MATRIX (N X N WHERE N IS # OF ATTRIBUTES)
999999
  1 00000000
=009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES)
  0 00000000
=010NUMBER AND NAME OF PROJECTS
  1 proj1
  2 proj2
  3 proj3
  4 proj4
  5 proj5

999999
= 11PROJECT MATRIX FOR ATTRIBUTE # 1
  1 00000000 3 00000000 3 00000000 5 00000000 0 00000000
  0 00000000 1 00000000 4 00000000 0 00000000 0 00000000
  0 00000000 0 00000000 1 00000000 5 00000000 0 00000000
  0 00000000 0 00000000 0 00000000 1 00000000 2 00000000
  6 00000000 0 00000000 0 00000000 0 00000000 1 00000000

999999
= 12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES)
  0 12711865 0 04237288 0 04237288 0 02542373 0 76271182
= 13FINAL PROJECT WEIGHTS (SAME ORDER AS NAMES)
  0 12711865 0 04237288 0 04237288 0 02542373 0 76271182
999999

```


Input, Executed Run, and Output using the BASIC Model for Person 4

INPUT FILE

Name: Mun 4 Input file name (if any): none

Organization: dlxb Name of output file to contain results: dlxb40.dat

Purpose: Composite example, Basic model Name of attribute (if any):

Project or Attribute (or Attribute) Comparisons

Attribute Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1 PROJ1	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2 PROJ2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3 PROJ3	1	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4 PROJ4	1	1	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5 PROJ5	1	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
12	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
13	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
14	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
15	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
17	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
19	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
20	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
21	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
22	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
23	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
24	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

EXECUTED RUN

LINDO USER INTERFACE
FOR PROJECT RANKING
MENU 0 0

- 0 --ENTER (CHANGE) HEADER INFORMATION
- 1 --EXECUTE BASIC MODEL
- 2 --EXECUTE ADDITIVE (ATTRIBUTES) MODEL
- 3 --EXECUTE VOTING MODEL
- 4 --EXECUTE HIERARCHY MODEL
- 5 --EXECUTE CONSTRAINTS MODEL
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --END PROGRAM, DELETE RESULTS
- 8 --END PROGRAM, SAVE(PRINT) RESULTS

PLEASE ENTER NUMBER OF YOUR CHOICE(0).

PLEASE ENTER YOUR NAME:

man 4
ORGANIZATION (DLX, DLXB, ETC)

purpose (if this file is official, so state)
ENTER A MAXIMUM OF FIVE LINES, ENTERING A BLANK LINE
TO QUIT BEFORE FIVE LINES
compare five projects

MENU 0 0

- 0 --ENTER (CHANGE) HEADER INFORMATION
- 1 --EXECUTE BASIC MODEL
- 2 --EXECUTE ADDITIVE (ATTRIBUTES) MODEL
- 3 --EXECUTE VOTING MODEL
- 4 --EXECUTE HIERARCHY MODEL
- 5 --EXECUTE CONSTRAINTS MODEL
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --END PROGRAM, DELETE RESULTS
- 8 --END PROGRAM, SAVE(PRINT) RESULTS

PLEASE ENTER NUMBER OF YOUR CHOICE(1)

MENU 1 1 -- BASIC MODEL

- 0 --SPECIFY NUMBER OF PROJECTS
- 1 --READ OLD PROJECT MATRIX FROM FILE
- 2 --ENTER (CHANGE) PROJECT NAMES
- ##--ENTER (CHANGE) (ADD), PROJECT COMPARISONS
- 4 --DISPLAY COMPARISONS
- ##--CALCULATE WEIGHTS
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF YOUR CHOICE (2)

Proj	Proj	Proj	Proj	Proj
1	2	3	4	5

```

0 --SPECIFY NUMBER OF PROJECTS
1 --READ OLD PROJECT MATRIX FROM FILE
2 --ENTER (CHANGE) PROJECT NAMES
3 --ENTER (CHANGE) (ADD) PROJECT COMPARISONS
4 --DISPLAY COMPARISONS
5 ***--CALCULATE WEIGHTS
6 --HELP ON PROJECT RANKING INTERFACE
7 --RETURN TO MAIN MENU

```

ENTER COMPARISONS IN THE FORM ROW COLUMN COMPARISON
ENTER ZEROS TO QUIT

3 7 7 3 0
2 2 1 5 0
1 3 5 7 0

```

0 --SPECIFY NUMBER OF PROJECTS
1
2 --READ OLD PROJECT MATRIX FROM FILE
3
4 --ENTER (CHANGE) PROJECT NAMES
5
6 --ENTER (CHANGE) (ADD) PROJECT COMPARISONS
7
8 --DISPLAY COMPARISONS
9
10 --CALCULATE WEIGHTS
11
12 --HELP ON PROJECT RANKING INTERFACE
13
14 --RETURN TO MAIN MENU
15

```

YOU ARE NOW ENTERING THE LINDO SYSTEM
WHEN ASKED IF YOU WISH TO DO A SENSITIVITY ANALYSIS, RESPOND WITH AN "N"
LP OPTIMUM FOUND AT STEP 5

3.3.3. ADD RANGE (SENSITIVITY) ANALYSIS?

NO.	NAME	PROJECT # AND NAME	WEIGHT
1		4 PROJ4	0.64285713
2		3 PROJ5	0.21428572
3		5 PROJ3	0.07142857
4		1 PROJ1	0.05357143
5		2 PROJ2	0.01705714

$\text{IND} = 0.0000$, $\text{INDEX} = 0.0000$ -- CONSISTENT
 LOW BETA MATRIX (Y/G):

MENU 1.1 -- BASIC MODEL

- 0 --SPECIFY NUMBER OF PROJECTS
- 1 --READ OLD PROJECT MATRIX FROM FILE
- 2 --ENTER (CHANGE) PROJECT NAMES
- 3 --ENTER (CHANGE) (ADD) PROJECT COMPARISONS
- 4 --DISPLAY COMPARISONS
- 5 --CALCULATE WEIGHTS
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF YOUR CHOICE (7)

MENU 0.0

- 0 --ENTER (CHANGE) HEADER INFORMATION
- 1 --EXECUTE BASIC MODEL
- 2 --EXECUTE ADDITIVE (ATTRIBUTES) MODEL
- 3 --EXECUTE VOTING MODEL
- 4 --EXECUTE HIERARCHY MODEL
- 5 --EXECUTE CONSTRAINTS MODEL
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --END PROGRAM, DELETE RESULTS
- 8 --END PROGRAM, SAVE (PRINT) RESULTS

PLEASE ENTER NUMBER OF YOUR CHOICE(8)

ENTER NAME OF OUTPUT FILE

jl1040.dat

WOULD YOU CARE FOR A PRINTED COPY (Y/N) ? (N)

quit

FORTRAN STOP

* lingo

LINDO (UC 6 DEC 82)

User

OUTPUT FILE


```

=001NAME
  man 4
=002ORGANIZATION
  d1:b
=003PURPOSE
  compare five projects

=004MODEL TYPE (1-5)
  1
=005NUMBER OF PROJECTS(1-200)
  5
=006NUMBER OF ATTRIBUTES(1- 20)
  1
=007NUMBER AND NAME OF ATTRIBUTES
  1 OVERALL WORTH

999999
=008ATTRIBUTE MATRIX (N X N WHERE N IS # OF ATTRIBUTES)
  1 00000000
999999
=009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES)
  0 00000000
=010NUMBER AND NAME OF PROJECTS
  1 proj1
  2 proj2
  3 proj3
  4 proj4
  5 proj5

999999
= 11PROJECT MATRIX FOR ATTRIBUTE # 1
  1 00000000 3 00000000 0 00000000 0 00000000 0 00000000
  0 00000000 1 00000000 0 00000000 0 00000000 0 00000000
  0 00000000 4 00000000 1 00000000 0 00000000 0 00000000
  0 00000000 0 00000000 0 00000000 1 00000000 3 00000000
  4 00000000 0 00000000 0 00000000 0 00000000 1 00000000
999999
= 12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES)
  0 05357143 0 01785714 0 07142857 0 64285713 0 21428572
= 13FINAL PROJECT WEIGHTS (SAME ORDER AS NAMES)
  0 05357143 0 01785714 0 07142857 0 64285713 0 21428572
999999

```

Input, Executed Run, and Output using the ADDITIVE Model for Person 5

INPUT FILE

```

Name: Man 5 Input file name (if any): none
Organization: dlxb Name of output file to contain results: dlxb50.dat
Purpose: Composite example, Additive (attributes) Model Name of attribute (if any): 

```

[illegible]

EXECUTED RUN

LINDO USER INTERFACE
FOR PROJECT RANKING
MENU 0 0

- 0 --ENTER (CHANGE) HEADER INFORMATION
- 1 --EXECUTE BASIC MODEL
- 2 --EXECUTE ADDITIVE (ATTRIBUTES) MODEL
- 3 --EXECUTE VOTING MODEL
- 4 --EXECUTE HIERARCHY MODEL
- 5 --EXECUTE CONSTRAINTS MODEL
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --END PROGRAM, DELETE RESULTS
- 8 --END PROGRAM, SAVE(PRINT) RESULTS

PLEASE ENTER NUMBER OF YOUR CHOICE(0):

PLEASE ENTER YOUR NAME:

man 5

ORGANIZATION (DLX, DLYB, ETC):

dlxb

PURPOSE (IF THIS FILE IS OFFICIAL, SO STATE.)
ENTER A MAXIMUM OF FIVE LINES, ENTERING A BLANK LINE
TO QUIT BEFORE FIVE LINES.

rank five projects

MENU 0 0

- 0 --ENTER (CHANGE) HEADER INFORMATION
- 1 --EXECUTE BASIC MODEL
- 2 --EXECUTE ADDITIVE (ATTRIBUTES) MODEL
- 3 --EXECUTE VOTING MODEL
- 4 --EXECUTE HIERARCHY MODEL
- 5 --EXECUTE CONSTRAINTS MODEL
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --END PROGRAM, DELETE RESULTS
- 8 --END PROGRAM, SAVE(PRINT) RESULTS

PLEASE ENTER NUMBER OF YOUR CHOICE(1):

2

MENU 1 2--ADDITIVE (ATTRIBUTES) MODEL

- 0 --SPECIFY NUMBER OF ATTRIBUTES
- 1 --READ OLD ATTRIBUTES MATRIX FROM FILE
- 2 --SPECIFY NUMBER OF PROJECTS
- 3 --READ OLD PROJECT MATRIX FROM FILE
- 4 --ENTER (CHANGE) ATTRIBUTE NAMES
- 5 --ENTER (CHANGE) PROJECT NAMES
- 6 --ENTER (CHANGE) (ADD) ATTRIBUTE COMPARISONS
- 7 --ENTER (CHANGE) (ADD) PROJECT COMPARISONS
- 8 --VIEW PROJECT OR ATTRIBUTE COMPARISONS
- 9 --CALCULATE ATTRIBUTE AND PROJECT WEIGHTS
- 10--HELP WITH PROJECT RANKING INTERFACE
- 11--RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF YOUR CHOICE (4):

ENTER ATTRIBUTE NAMES QUIT WITH A BLANK LINE

#1

attribute 1

#

attribute 2

#

attribute 3

#

MENU 1 2--ADDITIVE (ATTRIBUTES) MODEL

0 --SPECIFY NUMBER OF ATTRIBUTES
 1 --READ OLD ATTRIBUTES MATRIX FROM FILE
 2 --SPECIFY NUMBER OF PROJECTS
 3 --READ OLD PROJECT MATRIX FROM FILE
 4 --ENTER (CHANGE) ATTRIBUTE NAMES
 5 --ENTER (CHANGE) PROJECT NAMES
 6 --ENTER (CHANGE) (ADD) ATTRIBUTE COMPARISONS
 7 --ENTER (CHANGE) (ADD) PROJECT COMPARISONS
 8 --VIEW PROJECT OR ATTRIBUTE COMPARISONS
 9 --CALCULATE ATTRIBUTE AND PROJECT WEIGHTS
 10--HELP WITH PROJECT RANKING INTERFACE
 11--RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF YOUR CHOICE (6) :

ATTRIBUTE COMPARISONS
 ENTER COMPARISONS IN THE FORM ROW COLUMN COMPARISON
 ENTER ZEROS TO QUIT

1 2 5
 0 0 0

MENU 1.2--ADDITIVE (ATTRIBUTES) MODEL

0 --SPECIFY NUMBER OF ATTRIBUTES
 1 --READ OLD ATTRIBUTES MATRIX FROM FILE
 2 --SPECIFY NUMBER OF PROJECTS
 3 --READ OLD PROJECT MATRIX FROM FILE
 4 --ENTER (CHANGE) ATTRIBUTE NAMES
 5 --ENTER (CHANGE) PROJECT NAMES
 6 --ENTER (CHANGE) (ADD) ATTRIBUTE COMPARISONS
 7 --ENTER (CHANGE) (ADD) PROJECT COMPARISONS
 8 --VIEW PROJECT OR ATTRIBUTE COMPARISONS
 9 --CALCULATE ATTRIBUTE AND PROJECT WEIGHTS
 10--HELP WITH PROJECT RANKING INTERFACE
 11--RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF YOUR CHOICE (5) :

ENTER PROJECT NAMES QUIT WITH A BLANK LINE

#1	proj1	2
#		
#	proj2	3
#		
#	proj3	4
#		
#	proj4	5
#		
#	proj5	6
#		

MENU 1 2--ADDITIVE (ATTRIBUTES) MODEL

0 --SPECIFY NUMBER OF ATTRIBUTES
 1 --READ OLD ATTRIBUTES MATRIX FROM FILE
 2 --SPECIFY NUMBER OF PROJECTS
 3 --READ OLD PROJECT MATRIX FROM FILE
 4 --ENTER (CHANGE) ATTRIBUTE NAMES
 5 --ENTER (CHANGE) PROJECT NAMES
 6 --ENTER (CHANGE) (ADD) ATTRIBUTE COMPARISONS
 7 --ENTER (CHANGE) (ADD) PROJECT COMPARISONS
 8 --VIEW PROJECT OR ATTRIBUTE COMPARISONS
 9 --CALCULATE ATTRIBUTE AND PROJECT WEIGHTS
 10--HELP WITH PROJECT RANKING INTERFACE
 11--RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF YOUR CHOICE (7)

WITH RESPECT TO ATTRIBUTE 1 attribute 1
 ENTER COMPARISONS IN THE FORM ROW COLUMN COMPARISON
 ENTER ZEROS TO QUIT

1 2 3
 2 3 4
 1 4 2
 1 5 7
 2 5 6
 0 0 0

WITH RESPECT TO ATTRIBUTE 2 attribute 2
 ENTER COMPARISONS IN THE FORM ROW COLUMN COMPARISON
 ENTER ZEROS TO QUIT

3 1 5
 2 1 4
 1 4 7
 5 4 8
 0 0 0

MENU 1 2--ADDITIVE (ATTRIBUTES) MODEL

0 --SPECIFY NUMBER OF ATTRIBUTES
 1 --READ OLD ATTRIBUTES MATRIX FROM FILE
 2 --SPECIFY NUMBER OF PROJECTS
 3 --READ OLD PROJECT MATRIX FROM FILE
 4 --ENTER (CHANGE) ATTRIBUTE NAMES
 5 --ENTER (CHANGE) PROJECT NAMES
 6 --ENTER (CHANGE) (ADD) ATTRIBUTE COMPARISONS
 7 --ENTER (CHANGE) (ADD) PROJECT COMPARISONS
 8 --VIEW PROJECT OR ATTRIBUTE COMPARISONS
 9 --CALCULATE ATTRIBUTE AND PROJECT WEIGHTS
 10--HELP WITH PROJECT RANKING INTERFACE
 11--RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF YOUR CHOICE (9)

YOU ARE NOW ENTERING THE LINDO SYSTEM
 WHEN ASKED IF YOU WISH TO DO A SENSITIVITY ANALYSIS, RESPOND WITH AN "N"
 LP OPTIMUM FOUND AT STEP 2

0) RANGE (SENSITIVITY) ANALYSIS
 . .
 ATTRIBUTE WEIGHTS

RANK	ATTRIBUTE # AND NAME	WEIGHT
1	1 attribute 1	0.83333331
2	2 attribute 2	0.16666666

OBJ= 0.0000, INDEX= 0.0000---CONSISTENT
VIEW DELTA MATRIX (Y/(N))?

DISPLAY PROJECT WEIGHTS FOR EACH ATTRIBUTE?(Y/(N))

Y

YOU ARE NOW ENTERING THE LINDO SYSTEM
WHEN ASKED IF YOU WISH TO DO A SENSITIVITY ANALYSIS, RESPOND WITH AN "N"
LP OPTIMUM FOUND AT STEP 6

DO RANGE(SENSITIVITY) ANALYSIS?

> n
WITH RESPECT TO ATTRIBUTE 1 attribute 1

RANK	PROJECT # AND NAME	WEIGHT
1	1 proj1	0.48554912
2	4 proj4	0.24277456
3	2 proj2	0.16184972
4	5 proj5	0.06936417
5	3 proj3	0.04046243

OBJ= 0.2543, INDEX= 0.0509---CONSISTENT
VIEW DELTA MATRIX (Y/(N))?

YOU ARE NOW ENTERING THE LINDO SYSTEM

WHEN ASKED IF YOU WISH TO DO A SENSITIVITY ANALYSIS, RESPOND WITH AN "N"
LP OPTIMUM FOUND AT STEP 5

DO RANGE(SENSITIVITY) ANALYSIS?

> n
WITH RESPECT TO ATTRIBUTE 2 attribute 2

RANK	PROJECT # AND NAME	WEIGHT
1	3 proj3	0.44303799
2	2 proj2	0.35443038
3	5 proj5	0.10126583
4	1 proj1	0.08860759
5	4 proj4	0.01265823

OBJ= 0.0000, INDEX= 0.0000---CONSISTENT
VIEW DELTA MATRIX (Y/(N))?

FINAL WEIGHTS

RANK	PROJECT # AND NAME	WEIGHT
1	1 proj1	0.41939220
2	4 proj4	0.20442183
3	2 proj2	0.19394650
4	3 proj3	0.10755835
5	5 proj5	0.07468111

ALT RETURN: TO CONTINUE

MENU 1 2--ADDITIVE (ATTRIBUTES) MODEL

- 0 --SPECIFY NUMBER OF ATTRIBUTES
- 1 --READ OLD ATTRIBUTES MATRIX FROM FILE
- 2 --SPECIFY NUMBER OF PROJECTS
- 3 --READ OLD PROJECT MATRIX FROM FILE
- 4 --ENTER (CHANGE) ATTRIBUTE NAMES
- 5 --ENTER (CHANGE) PROJECT NAMES
- 6 --ENTER (CHANGE) (ADD) ATTRIBUTE COMPARISONS
- 7 --ENTER (CHANGE) (ADD) PROJECT COMPARISONS
- 8 --VIEW PROJECT OR ATTRIBUTE COMPARISONS
- 9 --CALCULATE ATTRIBUTE AND PROJECT WEIGHTS
- 10--HELP WITH PROJECT RANKING INTERFACE
- 11--RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF YOUR CHOICE. (11):

MENU 0 0

- 0 --ENTER (CHANGE) HEADER INFORMATION
- 1 --EXECUTE BASIC MODEL
- 2 --EXECUTE ADDITIVE (ATTRIBUTES) MODEL
- 3 --EXECUTE VOTING MODEL
- 4 --EXECUTE HIERARCHY MODEL
- 5 --EXECUTE CONSTRAINTS MODEL
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --END PROGRAM, DELETE RESULTS
- 8 --END PROGRAM, SAVE(PRINT) RESULTS

PLEASE ENTER NUMBER OF YOUR CHOICE(8):

ENTER NAME OF OUTPUT FILE
 j1.b50.dat
 WOULD YOU CARE FOR A PRINTED COPY (Y/N) ? (N)

quit
 FORTRAN STOP
 \$ lingo
 LINDO (UC 6 DEC 82)

OUTPUT FILE

```

=001NAME
  man 5
=002ORGANIZATION:
  dirb
=003PURPOSE
  rank five projects

=004MODEL TYPE (1-5):
  2
=005NUMBER OF PROJECTS(1-200)
  5
=006NUMBER OF ATTRIBUTES(1- 20)
  2
=007NUMBER AND NAME OF ATTRIBUTES
  1 attribute 1
  2 attribute 2

999999
=008ATTRIBUTE MATRIX (M X N WHERE N IS # OF ATTRIBUTES)
  1 00000000 5 00000000
  0 00000000 1 00000000

999999
=009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES)
  0 83333331 0 16666666
=010NUMBER AND NAME OF PROJECTS
  1 proj1
  2 proj2
  3 proj3
  4 proj4
  5 proj5

999999
= 11PROJECT MATRIX FOR ATTRIBUTE # 1
  1 00000000 3 00000000 0 00000000 2 00000000 7 00000000
  0 00000000 1 00000000 4 00000000 0 00000000 6 00000000
  0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
  0 00000000 0 00000000 0 00000000 1 00000000 0 00000000
  0 00000000 0 00000000 0 00000000 0 00000000 1 00000000

999999
= 12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES)
  0 18534912 0 16184972 0 04046243 0 24277456 0 06936417
= 13PROJECT MATRIX FOR ATTRIBUTE # 2
  1 00000000 0 00000000 0 00000000 7 00000000 0 00000000
  4 00000000 1 00000000 0 00000000 0 00000000 0 00000000
  5 00000000 0 00000000 1 00000000 0 00000000 0 00000000
  0 00000000 0 00000000 0 00000000 1 00000000 0 00000000
  0 00000000 0 00000000 0 00000000 0 00000000 1 00000000

999999
= 14PROJECT WEIGHTS FOR ATTRIBUTE # 2(SAME ORDER AS NAMES)
  0 08860759 0 35430308 0 44303799 0 01265823 0 10126583
= 15FINAL PROJECT WEIGHTS (SAME ORDER AS NAMES)
  0 41939220 0 19394650 0 10753035 0 20442183 0 07468111

999999

```

Input, Executed Run, and Output using the VOTING Model for
Group 1 - (Person 6)

INPUT FILE

Name of attribute (if any):

EXECUTED RUN

LINDO USER INTERFACE
FOR PROJECT RANKING
MENU 0 0

- 0 --ENTER (CHANGE) HEADER INFORMATION
- 1 --EXECUTE BASIC MODEL
- 2 --EXECUTE ADDITIVE (ATTRIBUTES) MODEL
- 3 --EXECUTE VOTING MODEL
- 4 --EXECUTE HIERARCHY MODEL
- 5 --EXECUTE CONSTRAINTS MODEL
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --END PROGRAM, DELETE RESULTS
- 8 --END PROGRAM, SAVE(PRINT) RESULTS

PLEASE ENTER NUMBER OF YOUR CHOICE(0)

PLEASE ENTER YOUR NAME:

man 6
ORGANIZATION (DLX, DLX2, ETC):
jlab

PURPOSE (IF THIS FILE IS OFFICIAL, SO STATE)
ENTER A MAXIMUM OF FIVE LINES, ENTERING A BLANK LINE
TO QUIT BEFORE FIVE LINES
combine results of man 1 and man 2

MENU 0 0

- 0 --ENTER (CHANGE) HEADER INFORMATION
- 1 --EXECUTE BASIC MODEL
- 2 --EXECUTE ADDITIVE (ATTRIBUTES) MODEL
- 3 --EXECUTE VOTING MODEL
- 4 --EXECUTE HIERARCHY MODEL
- 5 --EXECUTE CONSTRAINTS MODEL
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --END PROGRAM, DELETE RESULTS
- 8 --END PROGRAM, SAVE(PRINT) RESULTS

PLEASE ENTER NUMBER OF YOUR CHOICE(1)

MENU 1 3 -- VOTER MODEL

- 0 ENTER (ADD) INPUT FILE NAMES
- 1 VERIFY INPUT FILES
- **CALCULATE WEIGHTS
- 3 HELP WITH PROJECT RANKING INTERFACE
- 4 RETURN TO MAIN MENU

PLEASE ENTER THE NUMBER OF YOUR CHOICE(0)

ENTER FILE NAMES OF VOTERS. BLANK LINE WHEN DONE
j1b10 dat
j1b20 dat

MENU 1 3 -- VOTER MODEL

- 0 ENTER (ADD) INPUT FILE NAMES
- 1 VERIFY INPUT FILES
- 2 CALCULATE WEIGHTS
- 3 HELP WITH PROJECT RANKING INTERFACE
- 4 RETURN TO MAIN MENU

PLEASE ENTER THE NUMBER OF YOUR CHOICE(2)

RANK	PROJECT # AND NAME	HEIGHT
1	3 pr3	0 32873362
2	4 pr4	0 31769103
3	1 pr1	0 26088971
4	2 pr2	0 09268570

HIT <RETURN> TO CONTINUE

MENU 1 3 -- VOTER MODEL

- 0 ENTER (ADD) INPUT FILE NAMES
- 1 VERIFY INPUT FILES
- 2 CALCULATE WEIGHTS
- 3 HELP WITH PROJECT RANKING INTERFACE
- 4 RETURN TO MAIN MENU

PLEASE ENTER THE NUMBER OF YOUR CHOICE(4)

MENU 0 0

- 0 --ENTER (CHANGE) HEADER INFORMATION
- ***EXECUTE BASIC MODEL
- ***EXECUTE ADDITIVE (ATTRIBUTES) MODEL
- ***EXECUTE VOTING MODEL
- ***EXECUTE HIERARCHY MODEL
- 5 --EXECUTE CONSTRAINTS MODEL
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --END PROGRAM, DELETE RESULTS
- 8 --END PROGRAM, SAVE (PRINT) RESULTS

PLEASE ENTER NUMBER OF YOUR CHOICE(8)

ENTER NAME OF OUTPUT FILE

jlndoo dat

WOULD YOU CARE FOR A PRINTED COPY (Y/N) ? (N)

quit

*URTRAN STOP

* lndoo

jlndoo dat

user

OUTPUT FILE

```

+001NAME
  man 6
+002ORGANIZATION
  d1b
+003PURPOSE
  combine results of man 1 and man 2

-004MODEL TYPE (1-5)
  3
+005NUMBER OF PROJECTS(1-20)
  4
+006NUMBER OF ATTRIBUTES(1- 20)
  1
+007NUMBER AND NAME OF ATTRIBUTES
  1 OVERALL WORTH

+99999
+008ATTRIBUTE MATRIX (M x N WHERE N IS # OF ATTRIBUTES)
  1 00000000
+99999
+009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES)
  0 00000000
+010NUMBER AND NAME OF PROJECTS
  1 pr1
  2 pr2
  3 pr3
  4 pr4

+99999
= 11PROJECT MATRIX FOR ATTRIBUTE # 1
  0 00000000 0 00000000 0 00000000 0 00000000
  0 00000000 0 00000000 0 00000000 0 00000000
  0 00000000 0 00000000 0 00000000 0 00000000
  0 00000000 0 00000000 0 00000000 0 00000000
+99999
= 12PROJECT WEIGHTS FOR ATTRIBUTE # 1 (SAME ORDER AS NAMES)
  0 26088971 0 09268570 0 32873362 0 31769103
= 13FINAL PROJECT WEIGHTS (SAME ORDER AS NAMES)
  0 26088971 0 09268570 0 32873362 0 31769103
+99999

```

Input, Executed Run, and Output using the VOTER Model
for Group 2 - (Person 7)

INPUT FILE

Input file name (if any): dlxb30.dat dlxb40.dat dlxb50.dat

Organization: dlxb

Purpose: Composite example, Voting Model

[illegible]

EXECUTED RUN

LINDO USER INTERFACE
FOR PROJECT RANKING
MENU 0.0

- 0 --ENTER (CHANGE) HEADER INFORMATION
- 1 --EXECUTE BASIC MODEL
- 2 --EXECUTE ADDITIVE (ATTRIBUTES) MODEL
- 3 --EXECUTE VOTING MODEL
- 4 --EXECUTE HIERARCHY MODEL
- 5 --EXECUTE CONSTRAINTS MODEL
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --END PROGRAM, DELETE RESULTS
- 8 --END PROGRAM, SAVE(PRINT) RESULTS

PLEASE ENTER NUMBER OF YOUR CHOICE(0):

PLEASE ENTER YOUR NAME:

man 7
Organization (DLX, DLXB, ETC):

dlxb
PURPOSE (IF THIS FILE IS OFFICIAL, SO STATE.)
ENTER A MAXIMUM OF FIVE LINES. ENTERING A BLANK LINE
TO QUIT BEFORE FIVE LINES
three way vote with man 3, man 4, and man 5

MENU 0.0

- 0 --ENTER (CHANGE) HEADER INFORMATION
- 1 --EXECUTE BASIC MODEL
- 2 --EXECUTE ADDITIVE (ATTRIBUTES) MODEL
- 3 --EXECUTE VOTING MODEL
- 4 --EXECUTE HIERARCHY MODEL
- 5 --EXECUTE CONSTRAINTS MODEL
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --END PROGRAM, DELETE RESULTS
- 8 --END PROGRAM, SAVE(PRINT) RESULTS

PLEASE ENTER NUMBER OF YOUR CHOICE(1):

3

MENU 1 3 -- VOTER MODEL

- 0 ENTER (ADD) INPUT FILE NAMES
- 1 VERIFY INPUT FILES
- 2 CALCULATE WEIGHTS
- 3 HELP WITH PROJECT RANKING INTERFACE
- 4 RETURN TO MAIN MENU

PLEASE ENTER THE NUMBER OF YOUR CHOICE(0)

ENTER FILE NAMES OF VOTERS. BLANK LINE WHEN DONE
dlxb3o dat
dlxb4o dat
dlxb5o dat

MENU 1.3 -- VOTER MODEL

- 0 ENTER (ADD) INPUT FILE NAMES
- 1 VERIFY INPUT FILES
- 2 CALCULATE WEIGHTS
- 3 HELP WITH PROJECT RANKING INTERFACE
- 4 RETURN TO MAIN MENU

PLEASE ENTER THE NUMBER OF YOUR CHOICE(2) :

RA:K	PROJECT # AND NAME	WEIGHT
1	5 proj5	0 35055956
2	4 proj4	0 29090089
3	1 proj1	0 20002742
4	2 proj2	0 08472591
5	3 proj3	0 07378660

HIT (RETURN) TO CONTINUE

MENU 1.3 -- VOTER MODEL

- 0 ENTER (ADD) INPUT FILE NAMES
- 1 VERIFY INPUT FILES
- 2 CALCULATE WEIGHTS
- 3 HELP WITH PROJECT RANKING INTERFACE
- 4 RETURN TO MAIN MENU

PLEASE ENTER THE NUMBER OF YOUR CHOICE(4) :

MENU 0 0

- 0 --ENTER (CHANGE) HEADER INFORMATION
- 1 --EXECUTE BASIC MODEL
- 2 --EXECUTE ADDITIVE (ATTRIBUTES) MODEL
- 3 --EXECUTE VOTING MODEL
- 4 --EXECUTE HIERARCHY MODEL
- 5 --EXECUTE CONSTRAINTS MODEL
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --END PROGRAM. DELETE RESULTS
- 8 --END PROGRAM. SAVE (PRINT) RESULTS

PLEASE ENTER NUMBER OF YOUR CHOICE(8)

ENTER NAME OF OUTPUT FILE

jl1b70 dat

WOULD YOU CARE FOR A PRINTED COPY (Y/N) > (N)

quit

FORTRAN STOP

6 lino

LIN:00 (00 6 DEC 82)

user

OUTPUT FILE

=001NAME
man 7
=002ORGANIZATION
dlab
=003PURPOSE
three way vote with man 3, man 4, and man 5

=004MODEL TYPE (1-3).
3
=005NUMBER OF PROJECTS(1-200)
5
=006NUMBER OF ATTRIBUTES(1- 20)
1
=007NUMBER AND NAME OF ATTRIBUTES
1 OVERALL WORTH

777777
=008ATTRIBUTE MATRIX (N X N WHERE N IS # OF ATTRIBUTES)
1 00000000

777777
=009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES)
0 00000000

=010NUMBER AND NAME OF PROJECTS
1 proj1
2 proj2
3 proj3
4 proj4
5 proj5

777777
= 11PROJECT MATRIX FOR ATTRIBUTE # 1
0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
0 00000000 0 00000000 0 00000000 0 00000000 0 00000000

777777
= 12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES)
0 20002742 0 08472551 0 07378660 0 29090089 0 35055956
= 13FINAL PROJECT WEIGHTS (SAME ORDER AS NAMES)
0 20002742 0 08472551 0 07378660 0 29090089 0 35055956
777777

Input, Executed Run, and Output using the HIERARCHY Model and the CONSTRAINTS
Model for Division Chief - (Person 8)

INPUT FILE

Input file name (if any): dlxb60.dat dlxb70.dat

dlxb

Name of output file to contain results: dlxb90.dat

Composite example, Hierarchy Model

Name of attribute (if any):

Project or Attribute (or Attribute) Comparisons

Attribute Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1 PR1					5																			
2 PR3																								
3 PR4								3																
4 PROJ1																								
5 PROJ2				4																				
6 NEW1								2																
7 NEW2						4																		
8																								
9																								
10																								
11																								
12																								
13																								
14																								
15																								
16																								
17																								
18																								
19																								
20																								
21																								
22																								
23																								
24																								

Name: Man 8 Input file name (if any): none

Organization: dlxb Name of output file to contain results: dlxb90.dat

Purpose: Composite example, Constraints Model

	CONSTRAINTS	UNITS	TOTAL RESOURCES
1	Costs	Thousands of Dollars	1000
2			
3			
4			
5			
6			
7			
8			
9			
10			

Name: Man 8 Input file name (if any): none
 Organization: dlxb Name of output file to contain results: dlxb90.dat
 Purpose: Composite example, Constraints Model

PROJECT (OR ATTRIBUTE) NAME (UP TO 32 SPACES LONG)		RESOURCE REQUIREMENTS FOR CONSTRAINT #									
		1	2	3	4	5	6	7	8	9	10
1	PR1	200									
2	PR3	100									
3	PR4	500									
4	PROJ1	300									
5	PROJ2	50									
6	NEW1	750									
7	NEW2	450									
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											
23											
24											

EXECUTED RUN

LINDO USER INTERFACE
FOR PROJECT RANKING
MENU 0 0

- 0 --ENTER (CHANGE) HEADER INFORMATION
- 1 --EXECUTE BASIC MODEL
- 2 --EXECUTE ADDITIVE (ATTRIBUTES) MODEL
- 3 --EXECUTE VOTING MODEL
- 4 --EXECUTE HIERARCHY MODEL
- 5 --EXECUTE CONSTRAINTS MODEL
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --END PROGRAM, DELETE RESULTS
- 8 --END PROGRAM, SAVE(PRINT) RESULTS

PLEASE ENTER NUMBER OF YOUR CHOICE(0).

PLEASE ENTER YOUR NAME.

man B
ORGANIZATION (DLX, DLXB, ETC).
dlxb

PURPOSE (IF THIS FILE IS OFFICIAL, SO STATE)
ENTER A MAXIMUM OF FIVE LINES, ENTERING A BLANK LINE
TO QUIT BEFORE FIVE LINES
Combine projects ranked by group1 with those ranked by
group2, and add two new projects

MENU 0 0

- 0 --ENTER (CHANGE) HEADER INFORMATION
- 1 --EXECUTE BASIC MODEL
- 2 --EXECUTE ADDITIVE (ATTRIBUTES) MODEL
- 3 --EXECUTE VOTING MODEL
- 4 --EXECUTE HIERARCHY MODEL
- 5 --EXECUTE CONSTRAINTS MODEL
- 6 --HELP ON PROJECT RANKING INTERFACE
- 7 --END PROGRAM, DELETE RESULTS
- 8 --END PROGRAM, SAVE(PRINT) RESULTS

PLEASE ENTER NUMBER OF YOUR CHOICE(1)

HIERARCHY MODEL

ENTER THE NAME OF INPUT FILE # 1 . OR BLANK TO QUIT
31x660 .dat
FOR FILE # 1 CHOOSE ACTION

- 0--VIEW HEADER INFORMATION
- 1--LIST PROJECTS
- 2--LOAD ALL PROJECTS
- 3--LOAD CERTAIN PROJECTS ONLY
- 4--LOAD NO PROJECTS
- 5--HELP ON PROJECT RANKING INTERFACE

PLEASE ENTER NUMBER OF CHOICE(2)

ENTER PROJECT NUMBERS TO BE INCLUDED, QUIT WITH 0

1
1
1
1

ENTER THE NAME OF INPUT FILE # 2 . OR BLANK TO QUIT
31x660 .dat
FOR FILE # 2 CHOOSE ACTION

0 --VIEW HEADER INFORMATION
 1--LIST PROJECTS
 2--LOAD ALL PROJECTS
 3--LOAD CERTAIN PROJECTS ONLY
 4--LOAD NO PROJECTS
 5--HELP ON PROJECT RANKING INTERFACE

PLEASE ENTER NUMBER OF CHOICE(2)
 3

ENTER PROJECT NUMBERS TO BE INCLUDED. QUIT WITH 0

1
 2
 0

ENTER THE NAME OF INPUT FILE # 3 , OR BLANK TO QUIT

MENU 1 4 1 HIERARCHY CONTINUED

0 --VERIFY FILE INPUT
 1 --RECALL ADDITIONAL PROJECTS
 **--ADD NEW PROJECTS OF YOUR OWN
 3 --CHANGE PROJECT NAMES
 4 --LOAD COMPARISONS FROM SUBORDINATE FILES
 5 --SPECIFY NUMBER OF ATTRIBUTES
 6 --READ OLD ATTRIBUTE MATRIX FROM A FILE
 7 --ENTER (CHANGE) ATTRIBUTE NAMES
 **--ENTER (CHANGE) (ADD) ATTRIBUTE COMPARISONS
 **--ADD (CHANGE) PROJECT COMPARISONS
 10--DISPLAY PROJECT OR ATTRIBUTE MATRIX
 **--CALCULATE WEIGHTS
 12--HELP ON PROJECT RANKING INTERFACE
 13--RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF CHOICE(4)

MENU 1 4 1 HIERARCHY CONTINUED

0 --VERIFY FILE INPUT
 **--RECALL ADDITIONAL PROJECTS
 2 --ADD NEW PROJECTS OF YOUR OWN
 3 --CHANGE PROJECT NAMES
 **--LOAD COMPARISONS FROM SUBORDINATE FILES
 5 --SPECIFY NUMBER OF ATTRIBUTES
 6 --READ OLD ATTRIBUTE MATRIX FROM A FILE
 7 --ENTER (CHANGE) ATTRIBUTE NAMES
 **--ENTER (CHANGE) (ADD) ATTRIBUTE COMPARISONS
 9 --ADD (CHANGE) PROJECT COMPARISONS
 10--DISPLAY PROJECT OR ATTRIBUTE MATRIX
 11--CALCULATE WEIGHTS
 12--HELP ON PROJECT RANKING INTERFACE
 13--RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF CHOICE(9)

2
 ENTER NAMES OF NEW PROJECTS. QUIT WITH A BLANK
 name1
 name2

MENU 1 + 1 HIERARCHY CONTINUED

- 0 --VERIFY FILE INPUT
- 1 --RECALL ADDITIONAL PROJECTS
- 2 --ADD NEW PROJECTS OF YOUR OWN
- 3 --CHANGE PROJECT NAMES
- 4 --LOAD COMPARISONS FROM SUBORDINATE FILES
- 5 --SPECIFY NUMBER OF ATTRIBUTES
- 6 --READ OLD ATTRIBUTE MATRIX FROM A FILE
- 7 --ENTER (CHANGE) ATTRIBUTE NAMES
- 8 --ENTER (CHANGE) (ADD) ATTRIBUTE COMPARISONS
- 9 --ADD (CHANGE) PROJECT COMPARISONS
- 10--DISPLAY PROJECT OR ATTRIBUTE MATRIX
- 11--CALCULATE WEIGHTS
- 12--HELP ON PROJECT RANKING INTERFACE
- 13--RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF CHOICE(9).

0

SOURCE	PROJECT	NEW PROJECT NUMBER
1 d1b60 dat	1 pr1	1
1 d1b50 dat	3 pr3	2
1 d1b60 dat	4 pr4	3
2 d1b70 dat	1 proj1	4
2 d1b70 dat	2 proj2	5
25 ***USER-ADDED PROJECT***	0 new1	6
25 ***USER-ADDED PROJECT***	0 new2	7

HIT (RETURN) TO CONTINUE

MENU 1 + 1 HIERARCHY CONTINUED

- 0 --VERIFY FILE INPUT
- 1 --RECALL ADDITIONAL PROJECTS
- 2 --ADD NEW PROJECTS OF YOUR OWN
- 3 --CHANGE PROJECT NAMES
- 4 --LOAD COMPARISONS FROM SUBORDINATE FILES
- 5 --SPECIFY NUMBER OF ATTRIBUTES
- 6 --READ OLD ATTRIBUTE MATRIX FROM A FILE
- 7 --ENTER (CHANGE) ATTRIBUTE NAMES
- 8 --ENTER (CHANGE) (ADD) ATTRIBUTE COMPARISONS
- 9 --ADD (CHANGE) PROJECT COMPARISONS
- 10--DISPLAY PROJECT OR ATTRIBUTE MATRIX
- 11--CALCULATE WEIGHTS
- 12--HELP ON PROJECT RANKING INTERFACE
- 13--RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF CHOICE(9)

WITH RESPECT TO ATTRIBUTE 1 OVERALL WORTH
ENTER COMPARISONS IN THE FORM ROW COLUMN COMPARISON
ENTER ZEROS TO QUIT

1 4 5
3 7 3
7 5 4
5 7 2
5 3 4
0 0 0

MENU 1 4 1 HIERARCHY CONTINUED

```

0 --VERIFY FILE INPUT
**--RECALL ADDITIONAL PROJECTS
2 --ADD NEW PROJECTS OF YOUR OWN
3 --CHANGE PROJECT NAMES
**--LOAD COMPARISONS FROM SUBORDINATE FILES
5 --SPECIFY NUMBER OF ATTRIBUTES
6 --READ OLD ATTRIBUTE MATRIX FROM A FILE
7 --ENTER (CHANGE) ATTRIBUTE NAMES
**--ENTER (CHANGE) (ADD) ATTRIBUTE COMPARISONS
9 --ADD (CHANGE) PROJECT COMPARISONS
10--DISPLAY PROJECT OR ATTRIBUTE MATRIX
11--CALCULATE WEIGHTS
12--HELP ON PROJECT RANKING INTERFACE
13--RETURN TO MAIN MENU
  
```

PLEASE ENTER NUMBER OF CHOICE(11):

YOU ARE NOW ENTERING THE LINDO SYSTEM
WHEN ASKED IF YOU WISH TO DO A SENSITIVITY ANALYSIS, RESPOND WITH AN "N"
LP OPTIMUM FOUND AT STEP 1

DO RANGE(SENSITIVITY) ANALYSIS?

> n

ATTRIBUTE WEIGHTS

RANK	ATTRIBUTE # AND NAME	WEIGHT
1	1 OVERALL WORTH	1 00000000

OBJ= 0.0000. INDEX= 0.0000--CONSISTENT
DISPLAY DELTA MATRIX(Y/(N))?

DISPLAY PROJECT WEIGHTS FOR EACH ATTRIBUTE>(Y/(N))

YOU ARE NOW ENTERING THE LINDO SYSTEM.

WHEN ASKED IF YOU WISH TO DO A SENSITIVITY ANALYSIS, RESPOND WITH AN "N"
LP OPTIMUM FOUND AT STEP 11

DO RANGE(SENSITIVITY) ANALYSIS?

> n

WITH RESPECT TO ATTRIBUTE 1 OVERALL WORTH
PROJECT WEIGHTS WITH RESPECT TO ATTRIBUTE 1 OVERALL WORTH

RANK	PROJECT # AND NAME	WEIGHT
1	1 pr1	0 37343105
2	6 new1	0 25309196
3	2 pr3	0 13267513
4	7 new2	0 12654598
5	4 pr01	0 07469022
6	5 pr02	0 03163650
7	3 pr4	0 00790912

OBJ= 0.8693. INDEX= 0.1242--SOME CONSISTENCY
VIEW DELTA MATRIX(Y/(N))?

FINAL WEIGHTS		WEIGHT
RANK	PROJECT # AND NAME	
1	1 pr1	0 37343105
2	6 new1	0 25309196

3	2 pr3	0.1267513
4	7 ne2	0.12654598
5	4 proj1	0.07469022
6	5 proj2	0.03163650
7	3 pr4	0.00790912

HIT (RETURN) TO CONTINUE

MENU 1.4 1 HIERARCHY CONTINUED

```

0 --VERIFY FILE INPUT
**--RECALL ADDITIONAL PROJECTS
2 --ADD NEW PROJECTS OF YOUR OWN
3 --CHANGE PROJECT NAMES
**--LOAD COMPARISONS FROM SUBORDINATE FILES
5 --SPECIFY NUMBER OF ATTRIBUTES
6 --READ OLD ATTRIBUTE MATRIX FROM A FILE
7 --ENTER (CHANGE) ATTRIBUTE NAMES
**--ENTER (CHANGE) (ADD) ATTRIBUTE COMPARISONS
9 --ADD (CHANGE) PROJECT COMPARISONS
10--DISPLAY PROJECT OR ATTRIBUTE MATRIX
11--CALCULATE WEIGHTS
12--HELP ON PROJECT RANKING INTERFACE
13--RETURN TO MAIN MENU

```

PLEASE ENTER NUMBER OF CHOICE(13):

MENU 0.0

```

0 --ENTER (CHANGE) HEADER INFORMATION
**--EXECUTE BASIC MODEL
**--EXECUTE ADDITIVE (ATTRIBUTES) MODEL
**--EXECUTE VOTING MODEL
**--EXECUTE HIERARCHY MODEL
5 --EXECUTE CONSTRAINTS MODEL
6 --HELP ON PROJECT RANKING INTERFACE
7 --END PROGRAM, DELETE RESULTS
8 --END PROGRAM, SAVE(PRINT) RESULTS

```

PLEASE ENTER NUMBER OF YOUR CHOICE(8):

5

MENU 1.5 -- CONSTRAINTS MODEL

```

0 --ENTER PROJECTS AND WEIGHTS
1 --READ PROJECTS AND WEIGHTS FROM A FILE
2 --ENTER CONSTRAINTS
** --ENTER RESOURCE REQUIREMENTS FOR PROJECTS
** --CALCULATE WHICH PROJECTS ARE TO BE FUNDED
5 --VIEW PROJECT WEIGHTS AND NAMES
6 --HELP WITH PROJECT RANKING INTERFACE
7 --RETURN TO MAIN MENU

```

PLEASE ENTER NUMBER OF YOUR CHOICE (2)

ENTER NAME OF CONSTRAINT # 1. BLANK TO QUIT
costs
ENTER UNITS OF CONSTRAINT # 1
thousands of dollars
ENTER TOTAL AMOUNT OF AVAILABLE costs
IN UNITS OF thousands of dollars

1000

ENTER NAME OF CONSTRAINT # 2. BLANK TO QUIT

MENU 1 5 -- CONSTRAINTS MODEL

- 0 --ENTER PROJECTS AND WEIGHTS
- 1 --READ PROJECTS AND WEIGHTS FROM A FILE
- 2 --ENTER CONSTRAINTS
- 3 --ENTER RESOURCE REQUIREMENTS FOR PROJECTS
- ** --CALCULATE WHICH PROJECTS ARE TO BE FUNDED
- 5 --VIEW PROJECT WEIGHTS AND NAMES
- 6 --HELP WITH PROJECT RANKING INTERFACE
- 7 --RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF YOUR CHOICE (3)

FOR PROJECT # 1-pr1	ENTER
REQUIREMENT OF costs	IN thousands of dollars
300	
FOR PROJECT # 2-pr3	ENTER
REQUIREMENT OF costs	IN thousands of dollars
100	
FOR PROJECT # 3-pr4	ENTER
REQUIREMENT OF costs	IN thousands of dollars
300	
FOR PROJECT # 4-proj1	ENTER
REQUIREMENT OF costs	IN thousands of dollars
300	
FOR PROJECT # 5-proj2	ENTER
REQUIREMENT OF costs	IN thousands of dollars
50	
FOR PROJECT # 6-new1	ENTER
REQUIREMENT OF costs	IN thousands of dollars
750	
FOR PROJECT # 7-new2	ENTER
REQUIREMENT OF costs	IN thousands of dollars
450	

MENU 1 5 -- CONSTRAINTS MODEL

- 0 --ENTER PROJECTS AND WEIGHTS
- 1 --READ PROJECTS AND WEIGHTS FROM A FILE
- 2 --ENTER CONSTRAINTS
- 3 --ENTER RESOURCE REQUIREMENTS FOR PROJECTS
- ** --CALCULATE WHICH PROJECTS ARE TO BE FUNDED
- 5 --VIEW PROJECT WEIGHTS AND NAMES

6 --HELP WITH PROJECT RANKING INTERFACE
7 --RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF YOUR CHOICE [4]

LP OPTIMUM FOUND AT STEP 4
FIX ALL VARS (5) WITH RC > 0.147637E-01
SET X0006 TO 0 AT 1 3ND= 0 53776270 TWIN= 0 53776270

NEW INTEGER SOLUTION OF 0 537763 AT BRANCH 5
BOUND ON OPTIMUM 0.5377627
DELETE X0006 AT LEVEL 1
RELEASE FIXED VARS

FIX ALL VARS (2) WITH RC > 0.970185E-01
SET X0006 TO 0 AT 1 3ND= 0 71410215
SET X0004 TO 1 AT 2 3ND= 0 71087754 TWIN= 0 71410215
SET X0007 TO 1 AT 3 3ND= 0 64102483 TWIN= 0 69475460
SET X0002 TO 0 AT 4 3ND= 0 60632378 TWIN= 0 64102483
TWIN= 0 60632378

NEW INTEGER SOLUTION OF 0 606324 AT BRANCH 5 PIVOT 15
BOUND ON OPTIMUM 0.7317998
DELETE X0002 AT LEVEL 4
FLIP X0007 TO 0 WITH BOUND 0 6410248

NEW INTEGER SOLUTION OF 0 612453 AT BRANCH 5 PIVOT 17
BOUND ON OPTIMUM 0.7317998
DELETE X0007 AT LEVEL 3
FLIP X0004 TO 0 WITH BOUND 0 6947546

NEW INTEGER SOLUTION OF 0 664309 AT BRANCH 5 PIVOT 18
BOUND ON OPTIMUM 0.7317998
DELETE X0004 AT LEVEL 2
FLIP X0006 TO 1 WITH BOUND 0 7141021
DELETE X0006 AT LEVEL 1
RELEASE FIXED VARS

PIVOT LIMIT OF 27 EXCEEDED. HOW MANY MORE ALLOWED >
> 100

ENUMERATION COMPLETE BRANCHES= 5 PIVOTS= 27

LAST INTEGER SOLUTION IS THE BEST FOUND
FUND THE FOLLOWING PROJECTS

1 pr1
2 pr3
5 pr3j2
7 new2

OBJ= 0 6643087 THE CLOSER OBJ IS TO 1. THE BETTER
MIT RETURN TO CONTINUE

MENU 1 5 -- CONSTRAINTS MODEL

- 0 --ENTER PROJECTS AND WEIGHTS
- 1 --READ PROJECTS AND WEIGHTS FROM A FILE
- 2 --ENTER CONSTRAINTS
- 3 -- ENTER RESOURCE REQUIREMENTS FOR PROJECTS
- 4 --CALCULATE WHICH PROJECTS ARE TO BE FUNDED
- 5 --VIEW PROJECT WEIGHTS AND DATES

6 --HELP WITH PROJECT RANKING INTERFACE
7 --RETURN TO MAIN MENU

PLEASE ENTER NUMBER OF YOUR CHOICE (7)

MENU 0 0

0 --ENTER (CHANGE) HEADER INFORMATION
 ***EXECUTE BASIC MODEL
 ***EXECUTE ADDITIVE (ATTRIBUTES) MODEL
 ***EXECUTE VOTING MODEL
 ***EXECUTE HIERARCHY MODEL
 ***EXECUTE CONSTRAINTS MODEL
6 --HELP ON PROJECT RANKING INTERFACE
7 --END PROGRAM, DELETE RESULTS
8 --END PROGRAM, SAVE (PRINT) RESULTS

PLEASE ENTER NUMBER OF YOUR CHOICE(8)

ENTER NAME OF OUTPUT FILE

jl1090 dat

WOULD YOU CARE FOR A PRINTED COPY (Y/N) ? (N)

quit

FORTRAN STOP

\$ photo/off

OUTPUT FILE

```
-001NAME  
    nam B  
=002ORGANIZATION  
    dno  
=003PURPOSE  
    combine projects ranked by group1 with those ranked by  
    group2, and add two new projects  
  
=004MODEL TYPE (1-5)  
    5  
=005NUMBER OF PROJECTS(1-200)  
    7  
=006NUMBER OF ATTRIBUTES(1- 20)  
    1  
=007NUMBER AND NAME OF ATTRIBUTES  
    1 OVERALL WORTH  
  
****  
=008ATTRIBUTE MATRIX (N X N WHERE N IS # OF ATTRIBUTES)  
    1 00000000  
****  
=009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES)  
    1 00000000  
=010NUMBER AND NAME OF PROJECTS  
    1 pr1  
    2 pr3  
    3 pr4  
    4 proj1  
    5 proj2  
    6 new1  
    7 new2  
  
*****  
= 11PROJECT MATRIX FOR ATTRIBUTE # 1  
    1 00000000 2 9147783 0 7932041 5 00000000 0 00000000 0 00000000  
    0 00000000 1 00000000 0 28194773 0 00000000 0 00000000 0 00000000  
    0 00000000 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000  
    0 00000000 0 00000000 0 00000000 4 00000000 0 00000000 1 00000000  
    0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000  
    0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000  
    0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000  
    ****  
= 12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES)  
    0 37345105 0 13257513 0 00790912 0 07469022 0 03163050 0 00309195 0 12654598  
= 13FINAL PROJECT WEIGHTS (SAME ORDER AS NAMES)  
    0 37345105 0 13257513 0 00790912 0 07469022 0 03163050 0 00309195 0 12654598  
****
```

APPENDIX B

ADDITIONAL EXAMPLES

1. TEST EXAMPLE

Results from ranking projects using the Saaty-based program developed during Phase I [3] to the results from using the artificial deviation technique with a standard linear programming package to illustrate the effectiveness of the new technique even with missing comparisons when input is quite consistent. Eliminating a constraint is equivalent to omitting a comparison. The computer input and output below shows that a non-technical user needs an interactive frontend such as the one provided by this project. The objective function values and the weights given appear in Table B-1.

Model 7 BASIC

SAMPLE PROBLEM

1.00	0.20	0.11	0.50	0.33
5.00	1.00	0.33	3.00	2.00
9.00	3.00	1.00	8.00	4.00
2.00	0.33	0.13	1.00	0.50
3.00	0.50	0.25	2.00	1.00

SETUP

MIN $S1 + S2 + S3 + S4 + S5 + S6 + S7 + S8 + S9 + S10 + S11 + S12 + S13$
 $+ S14 + S15 + S16 + S17 + S18 + S19 + S20$

SUBJECT TO

- | | | | |
|------|--------------------------|-------------|-------------------|
| (1) | $-5W1 + W2$ | | $- S1 + S2 = 0$ |
| (2) | $-9W1$ | $+W3$ | $- S3 + S4 = 0$ |
| (3) | $-2W1$ | $+ W4$ | $- S5 + S6 = 0$ |
| (4) | $-3W1$ | $+ W5$ | $- S7 + S8 = 0$ |
| (5) | $-3W2 + W3$ | | $- S9 + S10 = 0$ |
| (6) | $- W2$ | $+3W4$ | $- S11 + S12 = 0$ |
| (7) | $- W2$ | $+2W5$ | $- S13 + S14 = 0$ |
| (8) | $- W3$ | $+8W4$ | $- S15 + S16 = 0$ |
| (9) | $- W3$ | $+4W5$ | $- S17 + S18 = 0$ |
| (10) | | $-2W4 + W5$ | $- S19 + S20 = 0$ |
| (11) | $W1 + W2 + W3 + W4 + W5$ | | $= 1$ |

SOLUTION

	SAATY	ABSOLUTE DEVIATION
W1	0.045	0.045455
W2	0.218	0.204545
W3	0.534	0.545455
W4	0.073	0.068182
W5	0.130	0.136364
OBJ		0.318181

REMOVE SOME OF THE CONSTRAINTS

REMOVE CONSTRAINT #	W1	W2	W3	W4	W5	OBJ.
1	.061	.183	.550	.069	.137	.214
1,6	.061	.183	.550	.069	.137	.191
1,6,8	.061	.183	.550	.069	.137	.191
1,3,6,8	.061	.183	.550	.069	.137	.137
1,3,4,6,8	.061	.183	.550	.069	.137	.092

A _{ij} 's				
1.00	—	—	—	—
4.50	1.00	—	3.00	1.50
12.0	2.67	1.00	8.00	4.00
1.50	—	—	1.00	—
3.00	—	—	2.00	1.00

2. SAATY SCHOOL EXAMPLES

- a. Output Files Documenting Table 2

b. Output Files Documenting Table 3

```

= 11PROJECT MATRIX FOR ATTRIBUTE # 1. CONSISTENT CASE, ZERO MISSING VALUES
1 00000000 5 00000000 7 00000000 5 00000000 3 00000000 1 00000000
0 00000000 1 00000000 3 00000000 0 00000000 0 00000000 0 00000000
0 00000000 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000
0 00000000 3 00000000 4 00000000 1 00000000 0 00000000 0 00000000
0 00000000 6 00000000 5 00000000 5 00000000 1 00000000 0 00000000
0 00000000 6 00000000 5 00000000 6 00000000 0 00000000 1 00000000

```

```

= 11PROJECT MATRIX FOR ATTRIBUTE # 1. CONSISTENT CASE, FIVE MISSING VALUES
1 00000000 5 00000000 7 00000000 5 00000000 3 00000000 1 00000000
0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000
0 00000000 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000
0 00000000 5 00000000 0 00000000 0 00000000 0 00000000 0 00000000
0 00000000 6 00000000 5 00000000 0 00000000 1 00000000 0 00000000
0 00000000 0 00000000 5 00000000 6 00000000 0 00000000 1 00000000

```

```

= 11PROJECT MATRIX FOR ATTRIBUTE # 1. CONSISTENT CASE, TEN MISSING VALUES
1 00000000 5 00000000 7 00000000 5 00000000 3 00000000 1 00000000
0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000
0 00000000 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000
0 00000000 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000
0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
0 00000000 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000

```

3. PERSONNEL EXAMPLE

a. Output Files Documenting Table 4

=003PURPOSE: HIRING EXAMPLE, ZERO MISSING PROJECT AND ATTRIBUTE VALUES

NUMBER OF PROJECTS(1-200):

-006NUMBER OF ATTRIBUTES(1- 20):

=007NUMBER AND NAME OF ATTRIBUTES

2 COMMUNICATIONS

4 ORGAN & MANAGEMENT

6 EXP & PLACEMENT

99999

COBATTIRISOTE HATRIX (N X N) WHERE

[illegible]

3 00000000
3 00000000
0 00000000
0 00000000

5,000,000 0.0000000

-009 ATTRIBUTE WEIGHTS (SAME ORDER

PROJECT NUMBER AND NAME OF PROJECTS:

2 APP2

4 APP4

6 APP 6

- I PROJECT MATRIX FOR ATTRIBUTE #

3.00000000	1.00000000	0.
------------	------------	----

3. 00000000 0. 00000000

目. 000000000
 5. 000000000
 4. 000000000

12890 RECT HEIGHTS FOR ATTRIBUTE

0.04088288 0.07473317 0.204315

[illegible]

Abstract

[REDACTED]

6 00000000 9 00000000 1 00000000 5 00000000 3 00000000 4 00000000 4 00000000
0 00000000 6 00000000 0 00000000 1 00000000 2 00000000 0 00000000 0 00000000
0 00000000 3 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
0 00000000 0 00000000 0 00000000 2 00000000 3 00000000 1 00000000 0 00000000
2 00000000 7 00000000 0 00000000 3 00000000 4 00000000 2 00000000 1 00000000

999999

- 14PROJECT WEIGHTS FOR ATTRIBUTE # 2(SAME ORDER AS NAMES):

0 08163265 0 02040816 0 48979592 0 08163265 0 04081633 0 12244898 0 16326530

- 15PROJECT MATRIX FOR ATTRIBUTE # 3:

1 00000000 3 00000000 0 00000000 1 00000000 2 00000000 0 00000000 0 00000000
0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
3 00000000 8 00000000 1 00000000 5 00000000 6 00000000 3 00000000 2 00000000
0 00000000 6 00000000 0 00000000 1 00000000 1 00000000 0 00000000 0 00000000
0 00000000 5 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
0 00000000 0 00000000 0 00000000 3 00000000 2 00000000 1 00000000 2 00000000
2 00000000 6 00000000 0 00000000 0 00000000 3 00000000 1 00000000 0 00000000
3 00000000 7 00000000 0 00000000 4 00000000 3 00000000 0 00000000 1 00000000

999999

- 16PROJECT WEIGHTS FOR ATTRIBUTE # 3(SAME ORDER AS NAMES):

0 12345679 0 02453503 0 37037036 0 07407407 0 06172840 0 15873016 0 18918518

- 17PROJECT MATRIX FOR ATTRIBUTE # 4:

1 00000000 7 00000000 0 00000000 4 00000000 1 00000000 2 00000000 0 00000000
0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
5 00000000 5 00000000 1 00000000 2 00000000 3 00000000 1 00000000 1 00000000
0 00000000 4 00000000 0 00000000 1 00000000 1 00000000 2 00000000 2 00000000
0 00000000 4 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
0 00000000 5 00000000 0 00000000 0 00000000 2 00000000 1 00000000 0 00000000
2 00000000 5 00000000 0 00000000 0 00000000 3 00000000 2 00000000 1 00000000

999999

- 18PROJECT WEIGHTS FOR ATTRIBUTE # 4(SAME ORDER AS NAMES):

0 13043478 0 02608696 0 26086956 0 10434783 0 08695652 0 13043478 0 26086956

- 19PROJECT MATRIX FOR ATTRIBUTE # 5:

1 00000000 7 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
3 00000000 9 00000000 1 00000000 4 00000000 6 00000000 2 00000000 1 00000000
2 00000000 6 00000000 0 00000000 1 00000000 4 00000000 0 00000000 0 00000000
2 00000000 5 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
3 00000000 6 00000000 0 00000000 2 00000000 3 00000000 1 00000000 0 00000000
4 00000000 7 00000000 0 00000000 3 00000000 3 00000000 1 50000000 1 00000000

999999

- 20PROJECT WEIGHTS FOR ATTRIBUTE # 5(SAME ORDER AS NAMES):

0 06382979 0 02836879 0 34042552 0 08310638 0 05673759 0 17021276 0 25531915

- 21PROJECT MATRIX FOR ATTRIBUTE # 6:

1 00000000 7 00000000 2 00000000 0 00000000 1 00000000 0 00000000 0 00000000
0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
0 00000000 4 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000
3 00000000 5 00000000 4 00000000 1 00000000 1 00000000 0 00000000 0 00000000
0 00000000 4 00000000 4 00000000 0 00000000 1 00000000 0 00000000 0 00000000
5 00000000 6 00000000 5 00000000 2 00000000 4 00000000 1 00000000 0 00000000
7 00000000 7 00000000 6 00000000 3 00000000 5 00000000 1 00000000 1 00000000

999999

- 22PROJECT WEIGHTS FOR ATTRIBUTE # 6(SAME ORDER AS NAMES):

0 05133471 0 02874743 0 05749487 0 14373717 0 07186858 0 28747433 0 35934290

- 23PROJECT MATRIX FOR ATTRIBUTE # 7:

1 00000000 3 00000000 0 00000000 0 00000000 0 00000000 0 00000000 4 00000000
0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 2 00000000
7 00000000 8 50000000 1 00000000 5 00000000 5 00000000 4 00000000 7 00000000
1 50000000 4 00000000 0 00000000 1 00000000 1 00000000 0 00000000 4 00000000
2 00000000 4 00000000 0 00000000 0 00000000 1 00000000 0 00000000 4 00000000
3 00000000 5 00000000 0 00000000 1 50000000 2 00000000 1 00000000 4 00000000
0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000

999999

- 24PROJECT WEIGHTS FOR ATTRIBUTE # (SAME ORDER AS NAMES)
 0 07547170 0 02641504 0 52830189 0 10566038 0 10566038 0 13207547 0 02641509
 = 25FINAL PROJECT WEIGHTS (SAME ORDER AS NAMES)
 0 08113996 0 02909927 0 24293540 0 11100346 0 07102947 0 21185337 0 25293908
 999999

=003PURPOSE: 6 MISSING PROJECT VALUES, REP 1

=003NUMBER OF PROJECTS(1-200):

=006NUMBER OF ATTRIBUTES(1- 20)

1 ACADEMIC FIELD

1 ACADEMIC FIELD

2 HUMAN RELATIONS

4 URGENT MANAGEMENT

6 EXP & PLACEMENT

$$= \text{COBALTIBRUTE MATRIX (N X N) WHERE}$$

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99

3.00000000 0.00000000 1.

3 00000000 0 00000000 0

1. ☐ 2. ☐ 3. ☐ 4. ☐ 5. ☐ 6. ☐ 7. ☐ 8. ☐ 9. ☐ 10. ☐ 11. ☐ 12. ☐ 13. ☐ 14. ☐ 15. ☐ 16. ☐ 17. ☐ 18. ☐ 19. ☐ 20. ☐ 21. ☐ 22. ☐ 23. ☐ 24. ☐ 25. ☐ 26. ☐ 27. ☐ 28. ☐ 29. ☐ 30. ☐ 31. ☐ 32. ☐ 33. ☐ 34. ☐ 35. ☐ 36. ☐ 37. ☐ 38. ☐ 39. ☐ 40. ☐ 41. ☐ 42. ☐ 43. ☐ 44. ☐ 45. ☐ 46. ☐ 47. ☐ 48. ☐ 49. ☐ 50. ☐ 51. ☐ 52. ☐ 53. ☐ 54. ☐ 55. ☐ 56. ☐ 57. ☐ 58. ☐ 59. ☐ 60. ☐ 61. ☐ 62. ☐ 63. ☐ 64. ☐ 65. ☐ 66. ☐ 67. ☐ 68. ☐ 69. ☐ 70. ☐ 71. ☐ 72. ☐ 73. ☐ 74. ☐ 75. ☐ 76. ☐ 77. ☐ 78. ☐ 79. ☐ 80. ☐ 81. ☐ 82. ☐ 83. ☐ 84. ☐ 85. ☐ 86. ☐ 87. ☐ 88. ☐ 89. ☐ 90. ☐ 91. ☐ 92. ☐ 93. ☐ 94. ☐ 95. ☐ 96. ☐ 97. ☐ 98. ☐ 99. ☐ 100. ☐

[illegible]

0.04282655 0.09635974 0.128479

1 APP1

[illegible]

4 App 4

6 APP6

三三三

[illegible]

1. 000000000 0 000000000 0

5 00000000 0 00000000 1

100

0.00000000 0.00000000

9999999

0 02608696 0 07826087 0 130434

PROJECT FINATA FOR ATTRIBUVE

0 000000000 1 000000000 0

1000

6 00000000 9 00000000 1 00000000 5 00000000 5 00000000 4 00000000 4 00000000
0 00000000 0 00000000 0 00000000 1 00000000 2 00000000 0 00000000 0 00000000
0 00000000 5 00000000 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000
0 00000000 0 00000000 0 00000000 0 00000000 3 00000000 1 00000000 0 00000000
0 00000000 7 00000000 0 00000000 3 00000000 4 00000000 2 00000000 1 00000000

999999

= 14PROJECT WEIGHTS FOR ATTRIBUTE # 2(SAME ORDER AS NAMES):

0 07667032 0 02628697 0 46002191 0 09200438 0 04600219 0 11500348 0 18400876

= 15PROJECT MATRIX FOR ATTRIBUTE # 3:

1 00000000 5 00000000 0 00000000 0 00000000 2 00000000 0 00000000 0 00000000
0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
0 00000000 8 00000000 1 00000000 5 00000000 6 00000000 3 00000000 0 00000000
0 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000
0 00000000 5 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
2 00000000 6 00000000 0 00000000 0 00000000 2 00000000 0 00000000 2 00000000
0 00000000 7 00000000 0 00000000 0 00000000 3 00000000 0 00000000 1 00000000

999999

= 16PROJECT WEIGHTS FOR ATTRIBUTE # 3(SAME ORDER AS NAMES):

0 12820314 0 02364103 0 38461339 0 07692308 0 08410237 0 12820514 0 19230770

= 17PROJECT MATRIX FOR ATTRIBUTE # 4:

1 00000000 7 00000000 0 00000000 4 00000000 1 00000000 2 00000000 0 00000000
0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
5 00000000 0 00000000 1 00000000 0 00000000 3 00000000 1 00000000 0 00000000
0 00000000 0 00000000 0 00000000 1 00000000 0 00000000 2 00000000 0 00000000
0 00000000 4 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
0 00000000 5 00000000 0 00000000 0 00000000 2 00000000 1 00000000 0 00000000
2 00000000 3 00000000 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000

999999

= 18PROJECT WEIGHTS FOR ATTRIBUTE # 4(SAME ORDER AS NAMES):

0 14762741 0 02108963 0 29325483 0 03690685 0 09841828 0 10544816 0 29325483

= 19PROJECT MATRIX FOR ATTRIBUTE # 5:

1 00000000 7 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
0 00000000 9 00000000 1 00000000 4 00000000 6 00000000 2 00000000 1 00000000
2 00000000 0 00000000 0 00000000 1 00000000 4 00000000 0 00000000 0 00000000
2 00000000 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
3 00000000 6 00000000 0 00000000 2 00000000 3 00000000 1 00000000 0 00000000
4 00000000 0 00000000 0 00000000 0 00000000 0 00000000 1 50000000 1 00000000

999999

= 20PROJECT WEIGHTS FOR ATTRIBUTE # 5(SAME ORDER AS NAMES):

0 05714286 0 02857143 0 34285712 0 08571428 0 03714286 0 17142856 0 25714284

= 21PROJECT MATRIX FOR ATTRIBUTE # 6:

1 00000000 7 00000000 2 00000000 0 00000000 1 00000000 0 00000000 0 00000000
0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
0 00000000 4 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000
0 00000000 5 00000000 0 00000000 1 00000000 1 00000000 0 00000000 0 00000000
0 00000000 0 00000000 0 00000000 4 00000000 1 00000000 0 00000000 0 00000000
5 00000000 6 00000000 5 00000000 2 00000000 4 00000000 1 00000000 0 00000000
0 00000000 0 00000000 6 00000000 0 00000000 5 00000000 1 00000000 1 00000000

999999

= 22PROJECT WEIGHTS FOR ATTRIBUTE # 6(SAME ORDER AS NAMES):

0 05797102 0 02898531 0 05797102 0 1492753 0 07246377 0 28985306 0 34782609

= 23PROJECT MATRIX FOR ATTRIBUTE # 7:

1 00000000 3 00000000 0 00000000 0 00000000 0 00000000 0 00000000 4 00000000
0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 2 00000000
7 00000000 0 00000000 1 00000000 0 00000000 5 00000000 4 00000000 7 00000000
0 00000000 4 00000000 0 00000000 1 00000000 0 00000000 0 00000000 4 00000000
2 00000000 4 00000000 0 00000000 0 00000000 1 00000000 0 00000000 4 00000000
0 00000000 0 00000000 0 00000000 1 50000000 2 00000000 1 00000000 4 00000000
0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000

999999

= 24PROJECT WEIGHTS FOR ATTRIBUTE # 7(SAME ORDER AS NAMES)
 O 07547170 O 02641509 O 52830189 O 10566038 O 13207547 O 02641509
 = 25FINAL PROJECT WEIGHTS (SAME ORDER AS NAMES)
 O 08599483 O 02865432 O 24573030 O 10019866 O 07435068 O 20533775 O 25973344
 999999

=001NAME.
COLLEURN
=002ORGANIZATION.

=003PURPOSE
15 MISSING PROJECT VALUES. ONE REP ONLY

=004MODEL TYPE (1-5):

=005NUMBER OF PROJECTS(1-200):

=006NUMBER OF ATTRIBUTES(1- 20):

=007NUMBER AND NAME OF ATTRIBUTES

- 1 ACADEMIC FIELD
- 2 COMMUNICATIONS
- 3 HUMAN RELATIONS
- 4 ORGANIZATION AND MANAGEM
- 5 ACTIVITY LEVEL
- 6 EXPERIENCE IN PLACEMENT
- 7 RESUME PRESENTATION

999999

=008ATTRIBUTE MATRIX (N X N WHERE N IS # OF ATTRIBUTES):

1	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
2	0.0000000	1.0000000	1.0000000	1.0000000	1.0000000	3.0000000	1.0000000
3	0.0000000	0.0000000	1.0000000	0.0000000	0.0000000	2.0000000	2.0000000
4	3.0000000	0.0000000	0.0000000	2.0000000	1.0000000	3.0000000	3.0000000
5	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	1.0000000	3.0000000
6	0.0000000	4.0000000	3.0000000	3.0000000	4.0000000	5.0000000	5.0000000
7	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	1.0000000

999999

=009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES):

0 04282635 0 09635974 0 12847966 0 19271947 0 07708780 0 38343895 0 07708780

=010NUMBER AND NAME OF PROJECTS:

- 1 APP1
- 2 APP2
- 3 APP3
- 4 APP4
- 5 APP5
- 6 APP6
- 7 APP7

999999

= 11PROJECT MATRIX FOR ATTRIBUTE # 1:

1	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
3	0.0000000	1.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
5	0.0000000	0.0000000	1.0000000	0.0000000	0.0000000	0.0000000	0.0000000
1	0.0000000	0.0000000	0.0000000	0.0000000	1.0000000	0.0000000	0.0000000
8	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	1.0000000	0.0000000
4	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	1.0000000

999999

= 12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES):

0 04000000 0 12000000 0 20000000 0 12000000 0 04000000 0 31999999 0 16000000

= 13PROJECT MATRIX FOR ATTRIBUTE # 2:

1	0.0000000	7.0000000	0.0000000	0.0000000	3.0000000	2.0000000	0.0000000
0	0.0000000	1.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

* 24PROJECT WEIGHTS FOR ATTRIBUTE # 7(SAME ORDER AS NAMES):
 O 06629834 O 02209945 O 46408841 O 09944752 O 13259669 O 19889504 O 01657459
 * 25FINAL PROJECT WEIGHTS (SAME ORDER AS NAMES)
 O 07385347 O 01710458 O 26636171 O 10728279 O 07285835 O 19011517 O 27242392
 999999

- b. Table of Objective Functions and Output Files
Documenting Figure 3.

TABLE B-1

IMPACT ON THE AVERAGE OBJECTIVE FUNCTION, \bar{Z} , OF DECREASING NUMBERS OF COMPARISONS, k , FOR MATRICES GENERATED IN THE PERSONNEL EXAMPLE WHERE \bar{Z} IS THE AVERAGE OF THREE RANDOMLY GENERATED REPLICATES FOR EACH NON-TRIVIAL VALUE OF k

Number of Comparisons, k	OBJ. FUNCTION VALUE (Z) FOR EACH GROUP OF N PROJECTS A-H ($N=7$)							
	$Z(A)$	$Z(B)$	$Z(C)$	$Z(D)$	$Z(E)$	$Z(F)$	$Z(G)$	$Z(H)$
21								
	1.2141	1.2554	1.5510	1.1852	2.0000	0.9149	1.1232	0.9868
AVE.	1.2141	1.2554	1.5510	1.1852	2.0000	0.9149	1.1232	0.9868
18								
	0.9302	1.0644	1.3333	1.1078	1.8522	0.8227	0.8689	0.6326
	1.0220	1.1518	1.3152	0.8314	1.4630	0.7801	0.9534	0.9213
	1.0493	1.0305	1.4574	1.0998	1.6829	0.6879	0.9720	0.8322
AVE.	1.0005	1.0822	1.3686	1.0130	1.6660	0.7636	0.9314	0.7954
16								
	1.0220	0.4794	1.1573	0.7160	0.9848	0.7159	0.8411	0.7388
	0.6582	0.9557	0.7815	0.8119	1.2278	0.4393	0.9178	0.6457
	0.6120	0.5953	1.1053	0.8056	1.4255	0.4696	0.8619	0.9075
AVE.	0.7641	0.6768	1.0147	0.7778	1.2127	0.5416	0.8736	0.7640
15								
	0.4980	0.5611	1.2826	0.7563	1.5263	0.4604	0.6616	0.6674
	0.5683	0.6000	1.1446	0.6795	1.2759	0.5714	0.6957	0.5811
	0.5706	0.5204	0.8421	0.6735	0.8679	0.7419	0.6166	0.7641
AVE.	0.5456	0.5605	1.0898	0.7031	1.2234	0.5912	0.6580	0.6709
13								
	0.4832	0.3866	0.8675	0.5598	0.5455	0.4762	0.5469	0.4240
	0.3374	0.3942	0.7290	0.5714	1.0411	0.4925	0.5185	0.3780
	0.4270	0.9020	0.6509	0.6364	0.5419	0.5329	0.6687	0.5726
AVE.	0.4159	0.5609	0.7491	0.5892	0.7095	0.5005	0.5780	0.4582
11								
	0.3656	0.3109	0.7621	0.1514	0.8511	0.1771	0.3145	0.1321
	0.2589	0.2725	0.2991	0.3950	0.7457	0.2464	0.4762	0.1874
	0.6299	0.2731	0.5822	0.4910	1.3226	0.2523	0.6972	0.1818
AVE.	0.4181	0.2855	0.5478	0.3458	0.9731	0.2253	0.4960	0.1671
6								
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AVE.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

*001NAME

COLBURN

*002ORGANIZATION

DLXB

*003PURPOSE

HIRING EXAMPLE. ZERO MISSING PROJECT AND ATTRIBUTE VALUES

*004MODEL TYPE (1-5)

2

*005NUMBER OF PROJECTS(1-200)

7

*006NUMBER OF ATTRIBUTES(1- 20)

7

*007NUMBER AND NAME OF ATTRIBUTES

1 ACADEMIC FIELD

2 COMMUNICATIONS

3 HUMAN RELATIONS

4 ORGAN & MANAGEMENT

5 ACTIVITY LEVEL

6 EXP & PLACEMENT

7 RESUME PRESENTATION

999999

*008ATTRIBUTE MATRIX (N X N WHERE N IS # OF ATTRIBUTES):

1	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
2	0.0000000	1.0000000	1.0000000	1.0000000	1.0000000	0.0000000	1.0000000
3	0.0000000	0.0000000	1.0000000	1.0000000	0.0000000	0.0000000	2.0000000
4	0.0000000	0.0000000	2.0000000	1.0000000	1.0000000	0.0000000	3.0000000
5	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	1.0000000
6	0.0000000	4.0000000	3.0000000	4.0000000	0.0000000	5.0000000	1.0000000
7	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	1.0000000

999999

*009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES):

0 04282655 0 09633974 0 12847966 0 19271947 0 07708780 0 38543895 0 07708780

*010NUMBER AND NAME OF PROJECTS

1 APP1

2 APP2

3 APP3

4 APP4

5 APP5

6 APP6

7 APP7

999999

* 11PROJECT MATRIX FOR ATTRIBUTE # 1:

1	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
3	0.0000000	1.0000000	0.0000000	1.0000000	2.0000000	0.0000000	0.0000000
5	0.0000000	5.0000000	1.0000000	3.0000000	4.0000000	0.0000000	3.0000000
3	0.0000000	0.0000000	0.0000000	1.0000000	2.0000000	0.0000000	2.0000000
1	0.0000000	0.0000000	0.0000000	0.0000000	1.0000000	0.0000000	0.0000000
8	0.0000000	6.0000000	4.0000000	6.0000000	7.0000000	1.0000000	7.0000000
4	0.0000000	2.0000000	0.0000000	0.0000000	2.0000000	0.0000000	1.0000000

999999

* 12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES):

0 04086266 0 07445517 0 20431328 0 07943517 0 05107832 0 47673097 0 06810443

* 13PROJECT MATRIX FOR ATTRIBUTE # 2:

1	0.0000000	7.0000000	0.0000000	0.0000000	2.0000000	2.0000000	0.0000000
0	0.0000000	1.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

6	0.0000000	9	0.0000000	1	0.0000000	5	0.0000000	5	0.0000000	4	0.0000000	4	0.0000000
0	0.0000000	6	0.0000000	0	0.0000000	1	0.0000000	2	0.0000000	0	0.0000000	0	0.0000000
0	0.0000000	5	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	1	0.0000000	0	0.0000000
0	0.0000000	6	0.0000000	0	0.0000000	2	0.0000000	3	0.0000000	1	0.0000000	0	0.0000000
2	0.0000000	7	0.0000000	0	0.0000000	3	0.0000000	4	0.0000000	2	0.0000000	1	0.0000000

999999

= 14PROJECT WEIGHTS FOR ATTRIBUTE # 2(SAME ORDER AS NAMES):

0 08163265 0 02040816 0 48979992 0 08163265 0 04081633 0 12244898 0 16326530

= 15PROJECT MATRIX FOR ATTRIBUTE # 3:

1	0.0000000	5	0.0000000	0	0.0000000	1	0.0000000	2	0.0000000	0	0.0000000	0	0.0000000
0	0.0000000	1	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000
3	0.0000000	8	0.0000000	1	0.0000000	5	0.0000000	6	0.0000000	3	0.0000000	2	0.0000000
0	0.0000000	6	0.0000000	0	0.0000000	1	0.0000000	1	0.0000000	0	0.0000000	0	0.0000000
0	0.0000000	5	0.0000000	0	0.0000000	0	0.0000000	1	0.0000000	0	0.0000000	0	0.0000000
2	0.0000000	6	0.0000000	0	0.0000000	3	0.0000000	2	0.0000000	1	0.0000000	2	0.0000000
3	0.0000000	7	0.0000000	0	0.0000000	4	0.0000000	3	0.0000000	0	0.0000000	1	0.0000000

999999

= 16PROJECT WEIGHTS FOR ATTRIBUTE # 3(SAME ORDER AS NAMES):

0 12343679 0 02645503 0 37037036 0 07407407 0 06172840 0 15873016 0 18318518

= 17PROJECT MATRIX FOR ATTRIBUTE # 4:

1	0.0000000	7	0.0000000	0	0.0000000	4	0.0000000	1	0.0000000	2	0.0000000	0	0.0000000
0	0.0000000	1	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000
5	0.0000000	5	0.0000000	1	0.0000000	2	0.0000000	3	0.0000000	1	0.0000000	1	0.0000000
0	0.0000000	4	0.0000000	0	0.0000000	1	0.0000000	1	0.0000000	2	0.0000000	2	0.0000000
0	0.0000000	4	0.0000000	0	0.0000000	0	0.0000000	1	0.0000000	0	0.0000000	0	0.0000000
0	0.0000000	5	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	1	0.0000000	0	0.0000000
2	0.0000000	5	0.0000000	0	0.0000000	0	0.0000000	2	0.0000000	3	0.0000000	1	0.0000000

999999

= 18PROJECT WEIGHTS FOR ATTRIBUTE # 4(SAME ORDER AS NAMES):

0 13043478 0 02608696 0 26086956 0 10434783 0 08695652 0 13043478 0 26086956

= 19PROJECT MATRIX FOR ATTRIBUTE # 5:

1	0.0000000	7	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000
0	0.0000000	1	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000
5	0.0000000	9	0.0000000	1	0.0000000	6	0.0000000	2	0.0000000	2	0.0000000	1	0.0000000
2	0.0000000	6	0.0000000	0	0.0000000	1	0.0000000	4	0.0000000	0	0.0000000	0	0.0000000
2	0.0000000	5	0.0000000	0	0.0000000	0	0.0000000	1	0.0000000	0	0.0000000	0	0.0000000
3	0.0000000	6	0.0000000	0	0.0000000	2	0.0000000	3	0.0000000	1	0.0000000	0	0.0000000
4	0.0000000	7	0.0000000	0	0.0000000	3	0.0000000	3	0.0000000	1	0.0000000	1	0.0000000

999999

= 20PROJECT WEIGHTS FOR ATTRIBUTE # 5(SAME ORDER AS NAMES):

0 06382979 0 02836879 0 34042352 0 08510638 0 03673759 0 17021276 0 25531915

= 21PROJECT MATRIX FOR ATTRIBUTE # 6:

1	0.0000000	7	0.0000000	2	0.0000000	0	0.0000000	1	0.0000000	0	0.0000000	0	0.0000000
0	0.0000000	1	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000
0	0.0000000	4	0.0000000	1	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000
3	0.0000000	5	0.0000000	4	0.0000000	1	0.0000000	1	0.0000000	0	0.0000000	0	0.0000000
0	0.0000000	4	0.0000000	0	0.0000000	1	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000
5	0.0000000	6	0.0000000	5	0.0000000	2	0.0000000	4	0.0000000	1	0.0000000	0	0.0000000
7	0.0000000	7	0.0000000	6	0.0000000	3	0.0000000	5	0.0000000	1	0.0000000	1	0.0000000

999999

= 22PROJECT WEIGHTS FOR ATTRIBUTE # 6(SAME ORDER AS NAMES):

0 0313471 0 02874743 0 03749487 0 14373717 0 07186858 0 28747433 0 35934290

= 23PROJECT MATRIX FOR ATTRIBUTE # 7:

1	0.0000000	3	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	4	0.0000000
0	0.0000000	1	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	2	0.0000000
7	0.0000000	8	0.0000000	1	0.0000000	5	0.0000000	5	0.0000000	4	0.0000000	7	0.0000000
1	0.0000000	4	0.0000000	0	0.0000000	1	0.0000000	1	0.0000000	0	0.0000000	4	0.0000000
2	0.0000000	4	0.0000000	0	0.0000000	0	0.0000000	1	0.0000000	0	0.0000000	4	0.0000000
3	0.0000000	5	0.0000000	0	0.0000000	1	0.0000000	2	0.0000000	1	0.0000000	4	0.0000000
0	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	1	0.0000000

999999

- 24PROJECT WEIGHTS FOR ATTRIBUTE # 7(SAME ORDER AS NAMES):
 0 07547170 0 02641509 0 52830189 0 10566038 0 13207547 0 02641509
 - 25FINAL PROJECT WEIGHTS (SAME ORDER AS NAMES)
 0 08113996 0 02909927 0 24293940 0 11100346 0 07102947 0 21183337 0 25293908
 999999

= 24PROJECT WEIGHTS FOR ATTRIBUTE * 7(SAME ORDER AS NAMES):
 O 07547170 O 02641509 O 52830189 O 10566038 O 13207547 O 02641509
 * 25FINAL PROJECT WEIGHTS (SAME ORDER AS NAMES)
 O 07692412 O 02820364 O 24043813 O 11290092 O 06996678 O 21496889 O 25657749
 999999

4 0.0000000 9 0.0000000 1 0.0000000 5 0.0000000 5 0.0000000 4 0.0000000 4 0.0000000
 0 0.0000000 6 0.0000000 0 0.0000000 1 0.0000000 2 0.0000000 0 0.0000000 0 0.0000000
 0 0.0000000 5 0.0000000 0 0.0000000 0 0.0000000 1 0.0000000 0 0.0000000
 0 0.0000000 6 0.0000000 0 0.0000000 2 0.0000000 3 0.0000000 1 0.0000000
 2 0.0000000 7 0.0000000 0 0.0000000 3 0.0000000 4 0.0000000 2 0.0000000 1 0.0000000

999999

= 14PROJECT WEIGHTS FOR ATTRIBUTE # 2(SAME ORDER AS NAMES):

0.08163265 0.02040816 0.4897992 0.08163265 0.04081633 0.12244898 0.16326530

= 15PROJECT MATRIX FOR ATTRIBUTE # 3:

1 0.0000000 5 0.0000000 0 0.0000000 1 0.0000000 2 0.0000000 0 0.0000000
 0 0.0000000 1 0.0000000 0 0.0000000 0 0.0000000 0 0.0000000 0 0.0000000
 3 0.0000000 8 0.0000000 1 0.0000000 5 0.0000000 6 0.0000000 3 0.0000000
 0 0.0000000 6 0.0000000 0 0.0000000 1 0.0000000 1 0.0000000 0 0.0000000
 0 0.0000000 5 0.0000000 0 0.0000000 0 0.0000000 1 0.0000000 0 0.0000000
 2 0.0000000 6 0.0000000 0 0.0000000 3 0.0000000 2 0.0000000 1 0.0000000
 3 0.0000000 7 0.0000000 0 0.0000000 4 0.0000000 3 0.0000000 0 0.0000000

999999

= 16PROJECT WEIGHTS FOR ATTRIBUTE # 3(SAME ORDER AS NAMES):

0.12345679 0.02645503 0.37037036 0.07407407 0.06172840 0.15873016 0.18518518

= 17PROJECT MATRIX FOR ATTRIBUTE # 4:

1 0.0000000 7 0.0000000 0 0.0000000 4 0.0000000 1 0.0000000 2 0.0000000
 0 0.0000000 1 0.0000000 0 0.0000000 0 0.0000000 0 0.0000000 0 0.0000000
 5 0.0000000 5 0.0000000 1 0.0000000 2 0.0000000 3 0.0000000 1 0.0000000
 0 0.0000000 4 0.0000000 0 0.0000000 1 0.0000000 1 0.0000000 2 0.0000000
 0 0.0000000 4 0.0000000 0 0.0000000 0 0.0000000 1 0.0000000 0 0.0000000
 0 0.0000000 5 0.0000000 0 0.0000000 0 0.0000000 2 0.0000000 1 0.0000000
 2 0.0000000 5 0.0000000 0 0.0000000 0 0.0000000 3 0.0000000 2 0.0000000

999999

= 18PROJECT WEIGHTS FOR ATTRIBUTE # 4(SAME ORDER AS NAMES):

0.13043478 0.02608696 0.26086956 0.10434783 0.08695652 0.13043478 0.26086956

= 19PROJECT MATRIX FOR ATTRIBUTE # 5:

1 0.0000000 7 0.0000000 0 0.0000000 0 0.0000000 0 0.0000000 0 0.0000000
 0 0.0000000 1 0.0000000 0 0.0000000 0 0.0000000 0 0.0000000 0 0.0000000
 5 0.0000000 9 0.0000000 1 0.0000000 4 0.0000000 6 0.0000000 2 0.0000000
 2 0.0000000 6 0.0000000 0 0.0000000 1 0.0000000 4 0.0000000 0 0.0000000
 2 0.0000000 5 0.0000000 0 0.0000000 0 0.0000000 1 0.0000000 0 0.0000000
 3 0.0000000 6 0.0000000 0 0.0000000 2 0.0000000 3 0.0000000 1 0.0000000
 4 0.0000000 7 0.0000000 0 0.0000000 3 0.0000000 3 0.0000000 1 0.0000000

999999

= 20PROJECT WEIGHTS FOR ATTRIBUTE # 5(SAME ORDER AS NAMES):

0.06382979 0.02876879 0.34042552 0.08510638 0.05673759 0.17021276 0.25531915

= 21PROJECT MATRIX FOR ATTRIBUTE # 6:

1 0.0000000 7 0.0000000 2 0.0000000 0 0.0000000 1 0.0000000 0 0.0000000
 0 0.0000000 1 0.0000000 0 0.0000000 0 0.0000000 0 0.0000000 0 0.0000000
 0 0.0000000 4 0.0000000 1 0.0000000 0 0.0000000 0 0.0000000 0 0.0000000
 3 0.0000000 5 0.0000000 4 0.0000000 1 0.0000000 1 0.0000000 0 0.0000000
 0 0.0000000 4 0.0000000 0 0.0000000 0 0.0000000 1 0.0000000 0 0.0000000
 5 0.0000000 6 0.0000000 5 0.0000000 2 0.0000000 4 0.0000000 1 0.0000000
 7 0.0000000 7 0.0000000 6 0.0000000 3 0.0000000 5 0.0000000 1 0.0000000

999999

= 22PROJECT WEIGHTS FOR ATTRIBUTE # 6(SAME ORDER AS NAMES):

0.05133471 0.02874743 0.05749487 0.14373717 0.07186858 0.28747433 0.35934290

= 23PROJECT MATRIX FOR ATTRIBUTE # 7:

1 0.0000000 3 0.0000000 0 0.0000000 0 0.0000000 0 0.0000000 0 0.0000000
 0 0.0000000 1 0.0000000 0 0.0000000 0 0.0000000 0 0.0000000 0 0.0000000
 7 0.0000000 8 5.0000000 1 0.0000000 5 0.0000000 5 0.0000000 4 0.0000000
 1 5.0000000 4 0.0000000 0 0.0000000 1 0.0000000 1 0.0000000 0 0.0000000
 2 0.0000000 4 0.0000000 0 0.0000000 0 0.0000000 1 0.0000000 0 0.0000000
 3 0.0000000 5 0.0000000 0 0.0000000 1 5.0000000 2 0.0000000 1 0.0000000
 0 0.0000000 0 0.0000000 0 0.0000000 0 0.0000000 0 0.0000000 0 0.0000000

999999

=001NAME
COLBURN
=002ORGANIZATION:
=003PURPOSE:
3 MISSING ATTRIBUTE VALUES, REP 3

=004MODEL TYPE (1-5):
2
=005NUMBER OF PROJECTS(1-200):
7
=006NUMBER OF ATTRIBUTES(1- 20):
7
=007NUMBER AND NAME OF ATTRIBUTES
1 ACADEMIC FIELD
2 COMMUNICATIONS
3 HUMAN RELATIONS
4 ORGAN & MANAGEMENT
5 ACTIVITY LEVEL
6 EXP & PLACEMENT
7 RESUME PRESENTATION

999999
=008ATTRIBUTE MATRIX (N X N WHERE N IS # OF ATTRIBUTES):
1 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
2 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
3 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000
4 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000
5 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000
6 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000
7 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000

999999
=009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES):
0.02463034 0.11083744 0.14778325 0.11083744 0.07389162 0.44334975 0.08866995
=010NUMBER AND NAME OF PROJECTS:
1 APP1
2 APP2
3 APP3
4 APP4
5 APP5
6 APP6
7 APP7

999999
= 11PROJECT MATRIX FOR ATTRIBUTE # 1:
1 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
2 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
3 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000
4 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000
5 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000
6 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000
7 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000
999999
= 12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES):
0.04086266 0.07945317 0.20431328 0.07945317 0.03107832 0.47673097 0.06810443
= 13PROJECT MATRIX FOR ATTRIBUTE # 2:
1 0.0000000 7.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
2 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
3 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000
4 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000
5 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000
6 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000
7 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000

* 24PROJECT WEIGHTS FOR ATTRIBUTE # 7(SAME ORDER AS NAMES):
O 07547170 O 02641509 O 52830189 O 10566038 O 10566038 O 13207547 O 02641509
* 25FINAL PROJECT WEIGHTS: (SAME ORDER AS NAMES)
O 08144297 O 02914429 O 23788673 O 11141342 O 07076127 O 21345448 O 25589484
999999

6 00000000 9 00000000 1 00000000 5 00000000 4 00000000 4 00000000
0 00000000 6 00000000 0 00000000 1 00000000 0 00000000 0 00000000
0 00000000 5 00000000 0 00000000 0 00000000 0 00000000 0 00000000
0 00000000 6 00000000 0 00000000 2 00000000 3 00000000 1 00000000
2 00000000 7 00000000 0 00000000 3 00000000 4 00000000 2 00000000

999999

= 14PROJECT WEIGHTS FOR ATTRIBUTE # 2(SAME ORDER AS NAMES):

0 08163265 0 02040816 0 48979592 0 08163265 0 04081633 0 12244898 0 16326530

= 15PROJECT MATRIX FOR ATTRIBUTE # 3:

1 00000000 5 00000000 0 00000000 1 00000000 2 00000000 0 00000000
0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000
3 00000000 8 00000000 1 00000000 5 00000000 6 00000000 3 00000000
0 00000000 6 00000000 0 00000000 1 00000000 0 00000000 0 00000000
0 00000000 5 00000000 0 00000000 0 00000000 1 00000000 0 00000000
0 00000000 5 00000000 0 00000000 0 00000000 1 00000000 0 00000000
2 00000000 6 00000000 0 00000000 3 00000000 2 00000000 1 00000000
3 00000000 7 00000000 0 00000000 4 00000000 3 00000000 0 00000000

999999

= 16PROJECT WEIGHTS FOR ATTRIBUTE # 3(SAME ORDER AS NAMES):

0 12345679 0 02645503 0 37037036 0 07407407 0 06172840 0 15873016 0 18518518

= 17PROJECT MATRIX FOR ATTRIBUTE # 4:

1 00000000 7 00000000 0 00000000 4 00000000 1 00000000 2 00000000
0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000
5 00000000 5 00000000 1 00000000 2 00000000 3 00000000 1 00000000
0 00000000 4 00000000 0 00000000 1 00000000 1 00000000 2 00000000
0 00000000 4 00000000 0 00000000 0 00000000 1 00000000 0 00000000
0 00000000 5 00000000 0 00000000 0 00000000 2 00000000 1 00000000
2 00000000 5 00000000 0 00000000 0 00000000 3 00000000 2 00000000

999999

= 18PROJECT WEIGHTS FOR ATTRIBUTE # 4(SAME ORDER AS NAMES):

0 13043478 0 02608696 0 26086956 0 10434783 0 08695652 0 13043478 0 26086956

= 19PROJECT MATRIX FOR ATTRIBUTE # 5:

1 00000000 7 00000000 0 00000000 0 00000000 0 00000000 0 00000000
0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000
5 00000000 9 00000000 1 00000000 4 00000000 6 00000000 2 00000000
2 00000000 6 00000000 0 00000000 1 00000000 4 00000000 0 00000000
2 00000000 5 00000000 0 00000000 0 00000000 1 00000000 0 00000000
3 00000000 6 00000000 0 00000000 2 00000000 3 00000000 1 00000000
4 00000000 7 00000000 0 00000000 3 00000000 3 00000000 1 50000000

999999

= 20PROJECT WEIGHTS FOR ATTRIBUTE # 5(SAME ORDER AS NAMES):

0 06382979 0 02836879 0 34042552 0 08510638 0 05673759 0 17021276 0 25531915

= 21PROJECT MATRIX FOR ATTRIBUTE # 6:

1 00000000 7 00000000 2 00000000 0 00000000 1 00000000 0 00000000
0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000
0 00000000 4 00000000 1 00000000 0 00000000 0 00000000 0 00000000
3 00000000 5 00000000 4 00000000 1 00000000 1 00000000 0 00000000
0 00000000 4 00000000 4 00000000 0 00000000 1 00000000 0 00000000
5 00000000 6 00000000 5 00000000 2 00000000 4 00000000 1 00000000
7 00000000 7 00000000 6 00000000 3 00000000 5 00000000 1 00000000

999999

= 22PROJECT WEIGHTS FOR ATTRIBUTE # 6(SAME ORDER AS NAMES):

0 05133471 0 02874743 0 05749487 0 14373717 0 07186858 0 28747433 0 35934290

= 23PROJECT MATRIX FOR ATTRIBUTE # 7:

1 00000000 3 00000000 0 00000000 0 00000000 0 00000000 0 00000000
0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000
7 00000000 8 50000000 1 00000000 5 00000000 5 00000000 4 00000000
1 50000000 4 00000000 0 00000000 1 00000000 1 00000000 0 00000000
2 00000000 4 00000000 0 00000000 1 00000000 0 00000000 0 00000000
3 00000000 5 00000000 0 00000000 1 50000000 2 00000000 1 00000000
0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000

999999

```

=001NAME
COLBURN
=002ORGANIZATION
=003PURPOSE.
3 MISSING ATTRIBUTE VALUES, REP 2

=004MODEL TYPE (1-5)
2
=005NUMBER OF PROJECTS(1-200)
7
=006NUMBER OF ATTRIBUTES(1- 20)
7
=007NUMBER AND NAME OF ATTRIBUTES
1 ACADEMIC FIELD
2 COMMUNICATIONS
3 HUMAN RELATIONS
4 ORGAN & MANAGEMENT
5 ACTIVITY LEVEL
6 EXP & PLACEMENT
7 RESUME PRESENTATION

999999
=008ATTRIBUTE MATRIX (N X N WHERE N IS # OF ATTRIBUTES)
1 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
2 0.0000000 1.0000000 1.0000000 1.0000000 1.0000000 0.0000000 0.0000000
3 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 2.0000000 0.0000000
4 0.0000000 0.0000000 0.0000000 2.0000000 1.0000000 1.0000000 0.0000000
5 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 3.0000000
6 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000
7 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000

999999
=009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES)
0 0.4395605 0.0989010 0.13186812 0.19780220 0.06593406 0.39560440 0.06593406
=010NUMBER AND NAME OF PROJECTS
1 APP1
2 APP2
3 APP3
4 APP4
5 APP5
6 APP6
7 APP7

999999
= 11PROJECT MATRIX FOR ATTRIBUTE # 1.
1 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
3 0.0000000 1.0000000 0.0000000 1.0000000 1.0000000 0.0000000 0.0000000
5 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000
3 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
1 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
8 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
4 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000

999999
= 12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES)
0 0.4086266 0.07945517 0.20431228 0.07945517 0.05107832 0.47673097 0.06810443
= 13PROJECT MATRIX FOR ATTRIBUTE # 2
1 0.0000000 7.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
0 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000

```

- 24PROJECT WEIGHTS FOR ATTRIBUTE # 7(SAME ORDER AS NAMES):
O 07347170 O 02641509 O 52830189 O 10566038 O 13207547 O 02641509
- 25FINAL PROJECT WEIGHTS: (SAME ORDER AS NAMES)
O 07817043 O 02911632 O 23831698 O 11100342 O 06777517 O 21796450 O 25765324
999999

```

=001NAME
COLBURN
=002ORGANIZATION.
=003PURPOSE
COOP EXAMPLE
3 MISSING VALUES FROM ATTRIBUTE MATRIX, REP 1

=004MODEL TYPE (1-5).
2
=005NUMBER OF PROJECTS(1-200).
7
=006NUMBER OF ATTRIBUTES(1- 20).
7
=007NUMBER AND NAME OF ATTRIBUTES
1 ACADEMIC FIELD
2 COMMUNICATIONS
3 HUMAN RELATIONS
4 ORGAN & MANAGEMENT
5 ACTIVITY LEVEL
6 EXP & PLACEMENT
7 RESUME PRESENTATION

999999
=008ATTRIBUTE MATRIX (N X N WHERE N IS # OF ATTRIBUTES):
1 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2 0.00000000 1.00000000 1.00000000 0.00000000 1.00000000 0.00000000 0.00000000
3 0.00000000 0.00000000 1.00000000 0.00000000 0.00000000 0.00000000 0.00000000
4 0.00000000 0.00000000 0.00000000 1.00000000 0.00000000 0.00000000 0.00000000
5 0.00000000 0.00000000 0.00000000 0.00000000 1.00000000 0.00000000 0.00000000
6 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 1.00000000 0.00000000
7 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 1.00000000

999999
=009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES):
0 04651163 0.13933489 0.13933489 0.13933489 0.06976745 0.41860467 0.04651163
=010NUMBER AND NAME OF PROJECTS:
1 APP1
2 APP2
3 APP3
4 APP4
5 APP5
6 APP6
7 APP7

999999
= 11PROJECT MATRIX FOR ATTRIBUTE # 1.
1 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
3 0.00000000 1.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
5 0.00000000 0.00000000 1.00000000 0.00000000 0.00000000 0.00000000 0.00000000
3 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
1 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
8 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
4 0.00000000 2.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000

999999
= 12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES):
0 04086266 0.07945517 0.20431328 0.07945517 0.05107832 0.47673097 0.06810443
= 13PROJECT MATRIX FOR ATTRIBUTE # 2.
1 0.00000000 7.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
0 0.00000000 1.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000

```

```

*001NAME:
COLBURN
*002ORGANIZATION
*003PURPOSE
3 MISSING PROJECT VALUES, REP 1

*004MODEL TYPE (1-5):
2
*005NUMBER OF PROJECTS(1-200):
7
*006NUMBER OF ATTRIBUTES(1- 20):
7
*007NUMBER AND NAME OF ATTRIBUTES
1 ACADEMIC FIELD
2 COMMUNICATIONS
3 HUMAN RELATIONS
4 ORGAN & MANAGEMENT
5 ACTIVITY LEVEL
6 EXP & PLACEMENT
7 RESUME PRESENTATION

999999
*008ATTRIBUTE MATRIX (N X N WHERE N IS # OF ATTRIBUTES):
1 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
2 0.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
3 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000
4 3.0000000 0.0000000 0.0000000 2.0000000 0.0000000 1.0000000 0.0000000
5 3.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
6 9.0000000 4.0000000 3.0000000 3.0000000 4.0000000 4.0000000 0.0000000
7 5.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
999999
*009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES):
0 042822655 0.09635974 0.12847966 0.19271947 0.07708780 0.38543893 0.07708780
*010NUMBER AND NAME OF PROJECTS:
1 APP1
2 APP2
3 APP3
4 APP4
5 APP5
6 APP6
7 APP7

999999
*11PROJECT MATRIX FOR ATTRIBUTE # 1:
1 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
3 0.0000000 1.0000000 0.0000000 0.0000000 1.0000000 2.0000000 0.0000000
5 0.0000000 5.0000000 0.0000000 1.0000000 3.0000000 4.0000000 0.0000000
3 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000 2.0000000 0.0000000
0 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
8 0.0000000 6.0000000 4.0000000 4.0000000 0.0000000 0.0000000 0.0000000
4 0.0000000 2.0000000 0.0000000 0.0000000 0.0000000 2.0000000 0.0000000
999999
*12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES):
0 03402187 0.08505467 0.17010935 0.08505467 0.04232734 0.51032805 0.07290401
*13PROJECT MATRIX FOR ATTRIBUTE # 2:
1 0.0000000 7.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
0 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 2.0000000 0.0000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000

```

6 00000000 9 00000000 1 00000000 3 00000000 3 00000000 4 00000000 4 00000000
0 00000000 6 00000000 0 00000000 1 00000000 2 00000000 0 00000000 0 00000000
0 00000000 5 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
0 00000000 6 00000000 0 00000000 2 00000000 3 00000000 1 00000000 0 00000000
0 00000000 7 00000000 0 00000000 0 00000000 4 00000000 2 00000000 1 00000000

999999

= 14PROJECT WEIGHTS FOR ATTRIBUTE # 2(SAME ORDER AS NAMES):

0 08130082 0 02032520 0 48780489 0 09756098 0 04878049 0 12193122 0 14227642

= 15PROJECT MATRIX FOR ATTRIBUTE # 3:

1 00000000 5 00000000 0 00000000 1 00000000 2 00000000 0 00000000 0 00000000
0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
3 00000000 8 00000000 1 00000000 5 00000000 6 00000000 3 00000000 2 00000000
0 00000000 6 00000000 0 00000000 1 00000000 1 00000000 0 00000000 0 00000000
0 00000000 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
2 00000000 0 00000000 0 00000000 3 00000000 2 00000000 1 00000000 2 00000000
3 00000000 7 00000000 0 00000000 4 00000000 0 00000000 0 00000000 1 00000000

999999

= 16PROJECT WEIGHTS FOR ATTRIBUTE # 3(SAME ORDER AS NAMES):

0 11608624 0 02487562 0 34825870 0 06963175 0 03804312 0 20893524 0 17412935

= 17PROJECT MATRIX FOR ATTRIBUTE # 4:

1 00000000 7 00000000 0 00000000 4 00000000 1 00000000 2 00000000 0 00000000
0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
5 00000000 5 00000000 1 00000000 2 00000000 3 00000000 1 00000000 0 00000000
0 00000000 4 00000000 0 00000000 1 00000000 1 00000000 2 00000000 0 00000000
0 00000000 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
0 00000000 5 00000000 0 00000000 0 00000000 2 00000000 1 00000000 0 00000000
2 00000000 0 00000000 0 00000000 0 00000000 0 00000000 2 00000000 1 00000000

999999

= 18PROJECT WEIGHTS FOR ATTRIBUTE # 4(SAME ORDER AS NAMES):

0 13043478 0 02608696 0 26086956 0 10434783 0 08695652 0 13043478 0 26086956

= 19PROJECT MATRIX FOR ATTRIBUTE # 5:

1 00000000 7 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
0 00000000 9 00000000 1 00000000 4 00000000 6 00000000 2 00000000 1 00000000
2 00000000 6 00000000 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000
0 00000000 5 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
3 00000000 6 00000000 0 00000000 0 00000000 3 00000000 1 00000000 0 00000000
4 00000000 7 00000000 0 00000000 3 00000000 3 00000000 1 50000000 1 00000000

999999

= 20PROJECT WEIGHTS FOR ATTRIBUTE # 5(SAME ORDER AS NAMES):

0 06382979 0 02836880 0 34042552 0 08510638 0 05673759 0 17021276 0 25531915

= 21PROJECT MATRIX FOR ATTRIBUTE # 6:

1 00000000 0 00000000 2 00000000 0 00000000 1 00000000 0 00000000 0 00000000
0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
0 00000000 4 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000
3 00000000 5 00000000 4 00000000 1 00000000 1 00000000 0 00000000 0 00000000
0 00000000 4 00000000 1 00000000 0 00000000 1 00000000 0 00000000 0 00000000
5 00000000 6 00000000 5 00000000 0 00000000 4 00000000 1 00000000 0 00000000
7 00000000 7 00000000 6 00000000 3 00000000 5 00000000 0 00000000 1 00000000

999999

= 22PROJECT WEIGHTS FOR ATTRIBUTE # 6(SAME ORDER AS NAMES):

0 05385997 0 04488330 0 05385997 0 12567325 0 07540395 0 26929983 0 37701976

= 23PROJECT MATRIX FOR ATTRIBUTE # 7:

1 00000000 3 00000000 0 00000000 0 00000000 0 00000000 0 00000000 4 00000000
0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
7 00000000 0 00000000 1 00000000 5 00000000 5 00000000 4 00000000 0 00000000
1 50000000 4 00000000 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000
2 00000000 4 00000000 0 00000000 0 00000000 1 00000000 0 00000000 4 00000000
3 00000000 5 00000000 0 00000000 1 50000000 2 00000000 1 00000000 4 00000000
0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000

999999

- 24PROJECT WEIGHTS FOR ATTRIBUTE # 7(SAME ORDER AS NAMES)
 O 07497637 O 02624180 O 52483600 O 10496720 O 10496720 O 13120900 O 03280225
 - 25FINAL PROJECT WEIGHTS (SAME ORDER AS NAMES)
 O 08080322 O 03333419 O 23676960 O 10319397 O 07226644 O 21262319 O 23700743
 999999

```

-001NAME:
COLBURN
-002ORGANIZATION:
DLXB
-003PURPOSE:
3 MISSING VALUES, REP 2

-004MODEL TYPE (1-5):
2
-005NUMBER OF PROJECTS(1-200):
7
-006NUMBER OF ATTRIBUTES(1- 20):
7
-007NUMBER AND NAME OF ATTRIBUTES
1 ACADEMIC FIELD
2 COMMUNICATIONS
3 HUMAN RELATIONS
4 ORGAN & MANAGEMENT
5 ACTIVITY LEVEL
6 EXP & PLACEMENT
7 RESUME PRESENTATION

999999
-008ATTRIBUTE MATRIX (N X N WHERE N IS # OF ATTRIBUTES):
1. 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2. 0.00000000 1.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
3. 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
4. 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
5. 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
6. 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
7. 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000

999999
-009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES):
0 0.4282633 0.09633974 0.12847966 0.19271947 0.07708780 0.38343893 0.07708780
-010NUMBER AND NAME OF PROJECTS:
1 APP 1
2 APP 2
3 APP 3
4 APP 4
5 APP 5
6 APP 6
7 APP 7

999999
- 11PROJECT MATRIX FOR ATTRIBUTE # 1:
1. 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
3. 0.00000000 1.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
5. 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
7. 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
8. 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
4. 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000

999999
- 12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES)
0 0.4017837 0.07812500 0.20089285 0.07812500 0.06696428 0.46874997 0.06696428
- 13PROJECT MATRIX FOR ATTRIBUTE # 2:
1. 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
3. 0.00000000 1.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
5. 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
7. 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
4. 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000

```


4 00000000 9 00000000 1 00000000 0 00000000 5 00000000 4 00000000 4 00000000
 0 00000000 0 00000000 0 00000000 1 00000000 2 00000000 0 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 2 00000000 3 00000000 1 00000000 0 00000000
 2 00000000 7 00000000 0 00000000 3 00000000 0 00000000 2 00000000 1 00000000

999999

= 14PROJECT WEIGHTS FOR ATTRIBUTE # 2(SAME ORDER AS NAMES):

0 08484849 0 01818182 0 50909090 0 04242424 0 09090909 0 12727273 0 12727273

= 15PROJECT MATRIX FOR ATTRIBUTE # 3:

1 00000000 5 00000000 0 00000000 1 00000000 2 00000000 0 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 3 00000000 8 00000000 0 00000000 1 00000000 6 00000000 0 00000000 2 00000000
 0 00000000 6 00000000 0 00000000 1 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 5 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 2 00000000 6 00000000 0 00000000 0 00000000 2 00000000 0 00000000 0 00000000
 3 00000000 7 00000000 0 00000000 0 00000000 3 00000000 1 00000000 1 00000000

999999

= 16PROJECT WEIGHTS FOR ATTRIBUTE # 3(SAME ORDER AS NAMES):

0 11343219 0 02431118 0 34035656 0 06807131 0 05672609 0 22690438 0 17017828

= 17PROJECT MATRIX FOR ATTRIBUTE # 4:

1 00000000 7 00000000 0 00000000 4 00000000 1 00000000 2 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 3 00000000 0 00000000 1 00000000 0 00000000 3 00000000 0 00000000 1 00000000
 0 00000000 4 00000000 0 00000000 1 00000000 1 00000000 0 00000000 2 00000000
 0 00000000 4 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 5 00000000 0 00000000 0 00000000 2 00000000 0 00000000 1 00000000
 2 00000000 5 00000000 0 00000000 0 00000000 3 00000000 2 00000000 1 00000000

999999

= 18PROJECT WEIGHTS FOR ATTRIBUTE # 4(SAME ORDER AS NAMES):

0 09239239 0 01851832 0 46296296 0 07407407 0 07407407 0 09239239 0 18518318

= 19PROJECT MATRIX FOR ATTRIBUTE # 5:

1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 3 00000000 9 00000000 1 00000000 4 00000000 6 00000000 2 00000000 1 00000000
 2 00000000 0 00000000 0 00000000 1 00000000 4 00000000 0 00000000 0 00000000
 2 00000000 5 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 3 00000000 0 00000000 0 00000000 2 00000000 3 00000000 1 00000000 0 00000000
 4 00000000 7 00000000 0 00000000 3 00000000 3 00000000 1 00000000 1 00000000

999999

= 20PROJECT WEIGHTS FOR ATTRIBUTE # 5(SAME ORDER AS NAMES):

0 06331658 0 03618091 0 33768845 0 08442211 0 05628141 0 16884422 0 25326633

= 21PROJECT MATRIX FOR ATTRIBUTE # 6:

1 00000000 7 00000000 2 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 4 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 3 00000000 5 00000000 4 00000000 1 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 4 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 3 00000000 6 00000000 5 00000000 2 00000000 4 00000000 1 00000000 0 00000000
 0 00000000 7 00000000 6 00000000 0 00000000 5 00000000 1 00000000 1 00000000

999999

= 22PROJECT WEIGHTS FOR ATTRIBUTE # 6(SAME ORDER AS NAMES):

0 06217617 0 03108808 0 05181347 0 15344042 0 07772021 0 31088084 0 31088084

= 23PROJECT MATRIX FOR ATTRIBUTE # 7:

1 00000000 3 00000000 0 00000000 0 00000000 0 00000000 0 00000000 4 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 2 00000000
 7 00000000 8 00000000 1 00000000 5 00000000 3 00000000 4 00000000 7 00000000
 0 00000000 4 00000000 0 00000000 1 00000000 1 00000000 0 00000000 4 00000000
 0 00000000 4 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 3 00000000 5 00000000 0 00000000 1 50000000 2 00000000 1 00000000 4 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000

999999

- 24PROJECT WEIGHTS FOR ATTRIBUTE # 7(SAME ORDER AS NAMES):
 0.07497637 0.02624180 0.52483600 0.10496720 0.10496720 0.13120900 0.03280223
 - 25FINAL PROJECT WEIGHTS: (SAME ORDER AS NAMES)
 0.07694322 0.02838478 0.27707133 0.10496751 0.07557819 0.22229193 0.21456304
 999999

```

-001NAME:
COLBURN
-002ORGANIZATION:
-003PURPOSE:
3 MISSING PROJECT VALUES, REP 3

-004MODEL TYPE (1-5):
2
-005NUMBER OF PROJECTS(1-200):
7
-006NUMBER OF ATTRIBUTES(1- 20):
7
-007NUMBER AND NAME OF ATTRIBUTES
1 ACADEMIC FIELD
2 COMMUNICATIONS
3 HUMAN RELATIONS
4 ORGAN & MANAGEMENT
5 ACTIVITY LEVEL
6 EXP & PLACEMENT
7 RESUME PRESENTATION

999999
-008ATTRIBUTE MATRIX (N X N WHERE N IS # OF ATTRIBUTES):
1. 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
2. 0.0000000 1.0000000 1.0000000 1.0000000 0.0000000 0.0000000 0.0000000
3. 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000
4. 0.0000000 0.0000000 0.0000000 2.0000000 1.0000000 0.0000000 0.0000000
5. 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
6. 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
7. 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000

999999
-009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES):
0.04282633 0.09633974 0.12847966 0.19271947 0.07708780 0.38543895 0.07708780
-010NUMBER AND NAME OF PROJECTS:
1 APP1
2 APP2
3 APP3
4 APP4
5 APP5
6 APP6
7 APP7

999999
-011PROJECT MATRIX FOR ATTRIBUTE # 1:
1. 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
3 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
5 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000
3 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
1. 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
0. 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
4. 0.0000000 2.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000

999999
-012PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES):
0.02851324 0.08333971 0.17107943 0.08333971 0.04276986 0.31323823 0.07331976
-013PROJECT MATRIX FOR ATTRIBUTE # 2:
1. 0.0000000 7.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
0. 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000

```

4 00000000 9 00000000 1 00000000 3 00000000 5 00000000 0 00000000 4 00000000
 0 00000000 0 00000000 0 00000000 1 00000000 2 00000000 0 00000000 0 00000000
 0 00000000 3 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 2 00000000 3 00000000 1 00000000 0 00000000
 2 00000000 7 00000000 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000
 999999

= 14PROJECT WEIGHTS FOR ATTRIBUTE # 2(SAME ORDER AS NAMES):

0 08731809 0.02494803 0.52390850 0.03821206 0.04365904 0.08731809 0.17463617

= 15PROJECT MATRIX FOR ATTRIBUTE # 3:

1 00000000 3 00000000 0 00000000 1 00000000 2 00000000 0 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 3 00000000 8 00000000 1 00000000 3 00000000 0 00000000 0 00000000 2 00000000
 0 00000000 6 00000000 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 3 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 2 00000000 5 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 3 00000000 7 00000000 0 00000000 0 00000000 3 00000000 2 00000000 1 00000000
 999999

= 16PROJECT WEIGHTS FOR ATTRIBUTE # 3(SAME ORDER AS NAMES):

0 11093502 0.02377179 0.33280507 0.06656101 0.09984153 0.19968306 0.16640253

= 17PROJECT MATRIX FOR ATTRIBUTE # 4:

1 00000000 7 00000000 0 00000000 4 00000000 1 00000000 2 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 3 00000000 0 00000000 0 00000000 1 00000000 3 00000000 0 00000000 1 00000000
 0 00000000 4 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 4 00000000 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000
 0 00000000 5 00000000 0 00000000 0 00000000 0 00000000 2 00000000 1 00000000
 2 00000000 3 00000000 0 00000000 0 00000000 0 00000000 3 00000000 2 00000000
 999999

= 18PROJECT WEIGHTS FOR ATTRIBUTE # 4(SAME ORDER AS NAMES):

0 12195122 0.02439024 0.29268292 0.09756097 0.09756097 0.12195122 0.24390244

= 19PROJECT MATRIX FOR ATTRIBUTE # 5:

1 00000000 7 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 3 00000000 9 00000000 1 00000000 4 00000000 0 00000000 6 00000000 2 00000000
 2 00000000 6 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 2 00000000 5 00000000 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000
 3 00000000 6 00000000 0 00000000 0 00000000 2 00000000 0 00000000 0 00000000
 4 00000000 7 00000000 0 00000000 0 00000000 3 00000000 0 00000000 1 00000000
 999999

= 20PROJECT WEIGHTS FOR ATTRIBUTE # 5(SAME ORDER AS NAMES):

0 06382979 0.02836880 0.34042552 0.08510638 0.05673759 0.17021276 0.25531915

= 21PROJECT MATRIX FOR ATTRIBUTE # 6:

1 00000000 7 00000000 2 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 4 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 3 00000000 0 00000000 4 00000000 1 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 4 00000000 4 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 5 00000000 6 00000000 0 00000000 2 00000000 0 00000000 1 00000000 0 00000000
 7 00000000 7 00000000 0 00000000 6 00000000 3 00000000 0 00000000 1 00000000
 999999

= 22PROJECT WEIGHTS FOR ATTRIBUTE # 6(SAME ORDER AS NAMES):

0 0594406 0.01958042 0.03496503 0.13986014 0.07832167 0.27972028 0.39160839

= 23PROJECT MATRIX FOR ATTRIBUTE # 7:

1 00000000 3 00000000 0 00000000 0 00000000 0 00000000 0 00000000 4 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 2 00000000
 7 00000000 8 30000000 1 00000000 3 00000000 0 00000000 0 00000000 7 00000000
 1 30000000 4 00000000 0 00000000 1 00000000 1 00000000 0 00000000 4 00000000
 2 00000000 4 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 5 00000000 0 00000000 1 50000000 2 00000000 1 00000000 4 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000
 999999

* 24PROJECT WEIGHTS FOR ATTRIBUTE * 7(SAME ORDER AS NAMES):
 O 06920415 O 03114187 O 48442906 O 10380623 O 12456748 O 15570934 O 03114187
 * 25FINAL PROJECT WEIGHTS (SAME ORDER AS NAMES)
 O 07920866 O 02595663 O 23403794 O 10509671 O 08183280 O 21249147 O 26137581
 999999

```

-001NAME:
COLBURN
-002ORGANIZATION

-003PURPOSE:
FIVE MISSING ATTRIBUTE VALUES, REP 1

-004MODEL TYPE (1-3):
2
-005NUMBER OF PROJECTS(1-200):
7
-006NUMBER OF ATTRIBUTES(1- 20):
7
-007NUMBER AND NAME OF ATTRIBUTES
1 ACADEMIC FIELD
2 COMMUNICATIONS
3 HUMAN RELATIONS
4 ORGAN & MANAGEMENT
5 ACTIVITY LEVEL
6 EXP & PLACEMENT
7 RESUME PRESENTATION

999999
-008ATTRIBUTE MATRIX (N X N WHERE N IS # OF ATTRIBUTES):
1. 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
2. 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
3. 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000
4. 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000
5. 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000
6. 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000
7. 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000

999999
-009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES):
0.04395605 0.09890110 0.13186812 0.19780220 0.065993406 0.39560440 0.06593406

-010NUMBER AND NAME OF PROJECTS:
1 APP1
2 APP2
3 APP3
4 APP4
5 APP5
6 APP6
7 APP7

999999
-11PROJECT MATRIX FOR ATTRIBUTE # 1:
1. 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
2. 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
3. 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000
4. 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000
5. 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000
6. 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000
7. 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000

999999
-12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES):
0.04086266 0.07945517 0.20431328 0.07945517 0.05107832 0.47673097 0.06810443

-13PROJECT MATRIX FOR ATTRIBUTE # 2:
1. 0.0000000 7.0000000 0.0000000 3.0000000 2.0000000 2.0000000 0.0000000
0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000

```

6. 00000000 9. 00000000 1. 00000000 5. 00000000 4. 00000000 4. 00000000
 0. 00000000 6. 00000000 0. 00000000 1. 00000000 2. 00000000 0. 00000000
 0. 00000000 3. 00000000 0. 00000000 0. 00000000 0. 00000000 0. 00000000
 0. 00000000 6. 00000000 0. 00000000 2. 00000000 3. 00000000 1. 00000000
 2. 00000000 7. 00000000 0. 00000000 3. 00000000 4. 00000000 2. 00000000
 999999

= 14PROJECT WEIGHTS FOR ATTRIBUTE # 2(SAME ORDER AS NAMES):
 0. 08163265 0. 02040816 0. 48979592 0. 08163265 0. 04081633 0. 12244898 0. 16326530

= 15PROJECT MATRIX FOR ATTRIBUTE # 3:
 1. 00000000 3. 00000000 0. 00000000 1. 00000000 2. 00000000 0. 00000000
 0. 00000000 1. 00000000 0. 00000000 0. 00000000 0. 00000000 0. 00000000
 3. 00000000 8. 00000000 1. 00000000 5. 00000000 6. 00000000 3. 00000000
 0. 00000000 6. 00000000 0. 00000000 1. 00000000 1. 00000000 0. 00000000
 0. 00000000 5. 00000000 0. 00000000 0. 00000000 1. 00000000 0. 00000000
 2. 00000000 6. 00000000 0. 00000000 3. 00000000 2. 00000000 1. 00000000
 3. 00000000 7. 00000000 0. 00000000 4. 00000000 3. 00000000 0. 00000000
 999999

= 16PROJECT WEIGHTS FOR ATTRIBUTE # 3(SAME ORDER AS NAMES):
 0. 12343679 0. 02645303 0. 37037036 0. 07407407 0. 06172840 0. 15873016 0. 18918518

= 17PROJECT MATRIX FOR ATTRIBUTE # 4:
 1. 00000000 7. 00000000 0. 00000000 4. 00000000 1. 00000000 2. 00000000
 0. 00000000 1. 00000000 0. 00000000 0. 00000000 0. 00000000 0. 00000000
 5. 00000000 5. 00000000 1. 00000000 2. 00000000 3. 00000000 1. 00000000
 0. 00000000 4. 00000000 0. 00000000 1. 00000000 1. 00000000 2. 00000000
 0. 00000000 4. 00000000 0. 00000000 0. 00000000 1. 00000000 0. 00000000
 0. 00000000 5. 00000000 0. 00000000 0. 00000000 2. 00000000 1. 00000000
 2. 00000000 5. 00000000 0. 00000000 0. 00000000 3. 00000000 2. 00000000
 999999

= 18PROJECT WEIGHTS FOR ATTRIBUTE # 4(SAME ORDER AS NAMES):
 0. 13043478 0. 02608696 0. 26086956 0. 10434783 0. 08695652 0. 13043478 0. 26086956

= 19PROJECT MATRIX FOR ATTRIBUTE # 5:
 1. 00000000 7. 00000000 0. 00000000 0. 00000000 0. 00000000 0. 00000000
 0. 00000000 1. 00000000 0. 00000000 0. 00000000 0. 00000000 0. 00000000
 5. 00000000 9. 00000000 1. 00000000 4. 00000000 6. 00000000 2. 00000000
 2. 00000000 6. 00000000 0. 00000000 1. 00000000 0. 00000000 0. 00000000
 2. 00000000 5. 00000000 0. 00000000 0. 00000000 1. 00000000 0. 00000000
 3. 00000000 6. 00000000 0. 00000000 2. 00000000 3. 00000000 1. 00000000
 4. 00000000 7. 00000000 0. 00000000 3. 00000000 3. 00000000 1. 00000000
 999999

= 20PROJECT WEIGHTS FOR ATTRIBUTE # 5(SAME ORDER AS NAMES):
 0. 06382979 0. 02836879 0. 34042552 0. 08310638 0. 03673759 0. 17021276 0. 25531915

= 21PROJECT MATRIX FOR ATTRIBUTE # 6:
 1. 00000000 7. 00000000 2. 00000000 0. 00000000 1. 00000000 0. 00000000
 0. 00000000 1. 00000000 0. 00000000 0. 00000000 0. 00000000 0. 00000000
 0. 00000000 4. 00000000 1. 00000000 0. 00000000 0. 00000000 0. 00000000
 3. 00000000 5. 00000000 4. 00000000 1. 00000000 1. 00000000 0. 00000000
 0. 00000000 4. 00000000 0. 00000000 0. 00000000 1. 00000000 0. 00000000
 5. 00000000 6. 00000000 5. 00000000 2. 00000000 4. 00000000 1. 00000000
 7. 00000000 7. 00000000 6. 00000000 3. 00000000 5. 00000000 1. 00000000
 999999

= 22PROJECT WEIGHTS FOR ATTRIBUTE # 6(SAME ORDER AS NAMES):
 0. 05133471 0. 02874743 0. 05749487 0. 14373717 0. 07186858 0. 28747433 0. 35934290

= 23PROJECT MATRIX FOR ATTRIBUTE # 7:
 1. 00000000 3. 00000000 0. 00000000 0. 00000000 0. 00000000 0. 00000000
 0. 00000000 1. 00000000 0. 00000000 0. 00000000 0. 00000000 0. 00000000
 7. 00000000 8. 00000000 1. 00000000 5. 00000000 4. 00000000 2. 00000000
 1. 50000000 4. 00000000 0. 00000000 1. 00000000 0. 00000000 0. 00000000
 2. 00000000 4. 00000000 0. 00000000 0. 00000000 1. 00000000 0. 00000000
 3. 00000000 5. 00000000 0. 00000000 1. 50000000 2. 00000000 1. 00000000
 0. 00000000 0. 00000000 0. 00000000 0. 00000000 0. 00000000 0. 00000000
 999999

= 24PROJECT WEIGHTS FOR ATTRIBUTE # 7(SAME ORDER AS NAMES):
 0. 05133471 0. 02874743 0. 05749487 0. 14373717 0. 07186858 0. 28747433 0. 35934290

= 24PROJECT WEIGHTS FOR ATTRIBUTE # 7(SAME ORDER AS NAMES):
 O 07547170 O 02641909 O 52830189 O 10566038 O 10566038 O 13207547 O 02641509
 = 25FINAL PROJECT WEIGHTS: (SAME ORDER AS NAMES)
 O 08144297 O 02914429 O 23788673 O 11141542 O 07076127 O 21345448 O 25389484
 999999


```

-001NAME:
COLBURN
-002ORGANIZATION:
-003PURPOSE:
FIVE MISSING ATTRIBUTE VALUES, REP 2

-004MODEL TYPE (1-5):
2
-005NUMBER OF PROJECTS(1-200):
7
-006NUMBER OF ATTRIBUTES(1- 20):
7
-007NUMBER AND NAME OF ATTRIBUTES
1 ACADEMIC FIELD
2 COMMUNICATIONS
3 HUMAN RELATIONS
4 ORGAN & MANAGEMENT
5 ACTIVITY LEVEL
6 EXP & PLACEMENT
7 RESUME PRESENTATION

999999
-008ATTRIBUTE MATRIX (N X N WHERE N IS # OF ATTRIBUTES):
1 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2 0.00000000 1.00000000 1.00000000 1.00000000 1.00000000 0.00000000 0.00000000
3 0.00000000 0.00000000 1.00000000 0.00000000 0.00000000 0.00000000 0.00000000
0 0.00000000 0.00000000 2.00000000 1.00000000 0.00000000 3.00000000 0.00000000
3 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 1.00000000 0.00000000
9 0.00000000 4.00000000 3.00000000 3.00000000 4.00000000 0.00000000 1.00000000
0 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 1.00000000

999999
-009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES):
0 0.0063291 0.1132403 0.13189874 0.11392403 0.07594937 0.45569620 0.03797469

-010NUMBER AND NAME OF PROJECTS:
1 APP1
2 APP2
3 APP3
4 APP4
5 APP5
6 APP6
7 APP7

999999
- 11PROJECT MATRIX FOR ATTRIBUTE # 1:
1 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
3 0.00000000 1.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
3 0.00000000 3.00000000 1.00000000 0.00000000 0.00000000 4.00000000 0.00000000
3 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 2.00000000 0.00000000
1 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 1.00000000 0.00000000
8 0.00000000 6.00000000 4.00000000 4.00000000 6.00000000 7.00000000 0.00000000
4 0.00000000 2.00000000 0.00000000 0.00000000 0.00000000 2.00000000 1.00000000

999999
- 12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES):
0 0.0086266 0.07945317 0.20431328 0.07945517 0.03107832 0.47673097 0.06810443

- 13PROJECT MATRIX FOR ATTRIBUTE # 2:
1 0.00000000 7.00000000 0.00000000 0.00000000 3.00000000 2.00000000 0.00000000
0 0.00000000 1.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000

```

6 00000000 9 00000000 1 00000000 3 00000000 5 00000000 4 00000000 4 00000000
0 00000000 0 00000000 0 00000000 1 00000000 2 00000000 0 00000000 0 00000000
0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
2 00000000 0 00000000 0 00000000 2 00000000 3 00000000 1 00000000 0 00000000
0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000

999999

= 14PROJECT WEIGHTS FOR ATTRIBUTE # 2(SAME ORDER AS NAMES):

0 08163265 0 02040816 0 48979592 0 08163265 0 04081633 0 12244898 0 16326530

= 15PROJECT MATRIX FOR ATTRIBUTE # 3:

1 00000000 3 00000000 0 00000000 1 00000000 2 00000000 0 00000000 0 00000000
0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
3 00000000 8 00000000 1 00000000 3 00000000 6 00000000 3 00000000 2 00000000
0 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000
0 00000000 3 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
2 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
3 00000000 0 00000000 0 00000000 3 00000000 2 00000000 1 00000000 2 00000000
0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000

999999

= 16PROJECT WEIGHTS FOR ATTRIBUTE # 3(SAME ORDER AS NAMES):

0 12343679 0 02645503 0 37037036 0 07407407 0 06172840 0 15873016 0 18518518

= 17PROJECT MATRIX FOR ATTRIBUTE # 4:

1 00000000 7 00000000 0 00000000 4 00000000 1 00000000 2 00000000 0 00000000
0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
3 00000000 3 00000000 1 00000000 2 00000000 3 00000000 1 00000000 0 00000000
0 00000000 4 00000000 0 00000000 1 00000000 1 00000000 2 00000000 0 00000000
0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000
0 00000000 3 00000000 0 00000000 0 00000000 0 00000000 2 00000000 1 00000000
2 00000000 0 00000000 0 00000000 0 00000000 0 00000000 3 00000000 2 00000000
0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000

999999

= 18PROJECT WEIGHTS FOR ATTRIBUTE # 4(SAME ORDER AS NAMES):

0 13043478 0 02608696 0 26086956 0 10434783 0 08695652 0 13043478 0 26086956

= 19PROJECT MATRIX FOR ATTRIBUTE # 5:

1 00000000 7 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
3 00000000 9 00000000 1 00000000 4 00000000 6 00000000 2 00000000 1 00000000
2 00000000 6 00000000 0 00000000 1 00000000 4 00000000 0 00000000 0 00000000
2 00000000 3 00000000 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000
3 00000000 6 00000000 0 00000000 2 00000000 3 00000000 1 00000000 0 00000000
4 00000000 7 00000000 0 00000000 3 00000000 3 00000000 1 50000000 1 00000000
0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000

999999

= 20PROJECT WEIGHTS FOR ATTRIBUTE # 5(SAME ORDER AS NAMES):

0 06382979 0 02636879 0 34042552 0 08510638 0 05673759 0 17021276 0 25531915

= 21PROJECT MATRIX FOR ATTRIBUTE # 6:

1 00000000 7 00000000 2 00000000 0 00000000 1 00000000 0 00000000 0 00000000
0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
0 00000000 4 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000
3 00000000 3 00000000 4 00000000 1 00000000 1 00000000 0 00000000 0 00000000
0 00000000 4 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
5 00000000 6 00000000 3 00000000 2 00000000 4 00000000 1 00000000 0 00000000
7 00000000 7 00000000 6 00000000 3 00000000 5 00000000 1 00000000 1 00000000
0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000

999999

= 22PROJECT WEIGHTS FOR ATTRIBUTE # 6(SAME ORDER AS NAMES):

0 05133471 0 02874743 0 05749487 0 14373717 0 07186858 0 28747433 0 35934290

= 23PROJECT MATRIX FOR ATTRIBUTE # 7:

1 00000000 3 00000000 0 00000000 0 00000000 0 00000000 0 00000000 4 00000000
0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 2 00000000
7 00000000 8 00000000 1 00000000 3 00000000 5 00000000 4 00000000 7 00000000
1 30000000 4 00000000 0 00000000 1 00000000 1 00000000 0 00000000 4 00000000
2 00000000 4 00000000 0 00000000 0 00000000 1 00000000 0 00000000 4 00000000
3 00000000 5 00000000 0 00000000 1 50000000 2 00000000 1 00000000 4 00000000
0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000

999999

- 24PROJECT WEIGHTS FOR ATTRIBUTE # 7(SAME ORDER AS NAMES):
 0. 07547170 0. 02641509 0. 52830189 0. 10366038 0. 10366038 0. 13207547 0. 02641509
 - 23FINAL PROJECT WEIGHTS: (SAME ORDER AS NAMES)
 0. 07608838 0. 02999624 0. 22424002 0. 11243914 0. 06759096 0. 22600278 0. 26404233
 999999

FIVE MISSING ATTRIBUTE VALUES. REP 3

006NUMBER OF ATTRIBUTES(1- 20):

7 RESUME PRESENTATION

DATE	DESCRIPTION	AMOUNT	BALANCE
1-1-68	INITIAL DEPOSIT	100.00	100.00
1-15-68	PAYROLL	50.00	50.00
2-1-68	RENT	25.00	25.00
2-15-68	PAYROLL	50.00	75.00
3-1-68	RENT	25.00	50.00
3-15-68	PAYROLL	50.00	100.00
4-1-68	RENT	25.00	75.00
4-15-68	PAYROLL	50.00	125.00
5-1-68	RENT	25.00	100.00
5-15-68	PAYROLL	50.00	150.00
6-1-68	RENT	25.00	125.00
6-15-68	PAYROLL	50.00	175.00
7-1-68	RENT	25.00	150.00
7-15-68	PAYROLL	50.00	200.00
8-1-68	RENT	25.00	175.00
8-15-68	PAYROLL	50.00	225.00
9-1-68	RENT	25.00	200.00
9-15-68	PAYROLL	50.00	250.00
10-1-68	RENT	25.00	225.00
10-15-68	PAYROLL	50.00	275.00
11-1-68	RENT	25.00	250.00
11-15-68	PAYROLL	50.00	300.00
12-1-68	RENT	25.00	275.00
12-15-68	PAYROLL	50.00	325.00
1-1-69	RENT	25.00	300.00
1-15-69	PAYROLL	50.00	350.00
2-1-69	RENT	25.00	325.00
2-15-69	PAYROLL	50.00	375.00
3-1-69	RENT	25.00	350.00
3-15-69	PAYROLL	50.00	400.00
4-1-69	RENT	25.00	375.00
4-15-69	PAYROLL	50.00	425.00
5-1-69	RENT	25.00	400.00
5-15-69	PAYROLL	50.00	450.00
6-1-69	RENT	25.00	425.00
6-15-69	PAYROLL	50.00	475.00
7-1-69	RENT	25.00	450.00
7-15-69	PAYROLL	50.00	500.00
8-1-69	RENT	25.00	475.00
8-15-69	PAYROLL	50.00	525.00
9-1-69	RENT	25.00	500.00
9-15-69	PAYROLL	50.00	550.00
10-1-69	RENT	25.00	525.00
10-15-69	PAYROLL	50.00	575.00
11-1-69	RENT	25.00	550.00
11-15-69	PAYROLL	50.00	600.00
12-1-69	RENT	25.00	575.00
12-15-69	PAYROLL	50.00	625.00
1-1-70	RENT	25.00	600.00
1-15-70	PAYROLL	50.00	650.00
2-1-70	RENT	25.00	625.00
2-15-70	PAYROLL	50.00	675.00
3-1-70	RENT	25.00	650.00
3-15-70	PAYROLL	50.00	700.00
4-1-70	RENT	25.00	675.00
4-15-70	PAYROLL	50.00	725.00
5-1-70	RENT	25.00	700.00
5-15-70	PAYROLL	50.00	750.00
6-1-70	RENT	25.00	725.00
6-15-70	PAYROLL	50.00	775.00
7-1-70	RENT	25.00	750.00
7-15-70	PAYROLL	50.00	800.00
8-1-70	RENT	25.00	775.00
8-15-70	PAYROLL	50.00	825.00
9-1-70	RENT	25.00	800.00
9-15-70	PAYROLL	50.00	850.00
10-1-70	RENT	25.00	825.00
10-15-70	PAYROLL	50.00	875.00
11-1-70	RENT	25.00	850.00
11-15-70	PAYROLL	50.00	900.00
12-1-70	RENT	25.00	875.00
12-15-70	PAYROLL	50.00	925.00
1-1-71	RENT	25.00	900.00
1-15-71	PAYROLL	50.00	950.00
2-1-71	RENT	25.00	925.00
2-15-71	PAYROLL	50.00	975.00
3-1-71	RENT	25.00	950.00
3-15-71	PAYROLL	50.00	1000.00
4-1-71	RENT	25.00	975.00
4-15-71	PAYROLL	50.00	

7 APP 7

PROJECT MEMBERS FOR ATTENDING

[illegible]

6 00000000 9 00000000 1 00000000 5 00000000 5 00000000 4 00000000 4 00000000
0 00000000 6 00000000 0 00000000 1 00000000 2 00000000 0 00000000 0 00000000
0 00000000 3 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
0 00000000 6 00000000 0 00000000 2 00000000 3 00000000 1 00000000 0 00000000
2 00000000 7 00000000 0 00000000 3 00000000 4 00000000 2 00000000 1 00000000

999999

= 14PROJECT WEIGHTS FOR ATTRIBUTE # 2(SAME ORDER AS NAMES):

0 08163265 0 02040816 0 48979592 0 08163265 0 04081633 0 12244898 0 16326530

= 15PROJECT MATRIX FOR ATTRIBUTE # 3:

1 00000000 5 00000000 0 00000000 1 00000000 2 00000000 0 00000000 0 00000000
0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
3 00000000 8 00000000 1 00000000 5 00000000 6 00000000 3 00000000 2 00000000
0 00000000 6 00000000 0 00000000 1 00000000 1 00000000 0 00000000 0 00000000
0 00000000 5 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
2 00000000 6 00000000 0 00000000 3 00000000 2 00000000 1 00000000 0 00000000
3 00000000 7 00000000 0 00000000 4 00000000 3 00000000 0 00000000 1 00000000

999999

= 16PROJECT WEIGHTS FOR ATTRIBUTE # 3(SAME ORDER AS NAMES):

0 12343679 0 02645303 0 37037036 0 07407407 0 06172840 0 15873016 0 18518518

= 17PROJECT MATRIX FOR ATTRIBUTE # 4:

1 00000000 7 00000000 0 00000000 4 00000000 1 00000000 2 00000000 0 00000000
0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
5 00000000 5 00000000 1 00000000 2 00000000 3 00000000 1 00000000 0 00000000
0 00000000 4 00000000 0 00000000 1 00000000 1 00000000 2 00000000 0 00000000
0 00000000 3 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
0 00000000 5 00000000 0 00000000 0 00000000 2 00000000 1 00000000 0 00000000
2 00000000 5 00000000 0 00000000 0 00000000 3 00000000 2 00000000 1 00000000

999999

= 18PROJECT WEIGHTS FOR ATTRIBUTE # 4(SAME ORDER AS NAMES):

0 13043478 0 02608696 0 26086956 0 10434783 0 08695652 0 13043478 0 26086956

= 19PROJECT MATRIX FOR ATTRIBUTE # 5:

1 00000000 7 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
5 00000000 9 00000000 1 00000000 4 00000000 6 00000000 2 00000000 1 00000000
2 00000000 6 00000000 0 00000000 1 00000000 4 00000000 0 00000000 0 00000000
2 00000000 5 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
3 00000000 6 00000000 0 00000000 2 00000000 3 00000000 1 00000000 0 00000000
4 00000000 7 00000000 0 00000000 3 00000000 3 00000000 1 50000000 0 00000000

999999

= 20PROJECT WEIGHTS FOR ATTRIBUTE # 5(SAME ORDER AS NAMES):

0 06385979 0 02836879 0 34042552 0 08510638 0 03673759 0 17021276 0 25531915

= 21PROJECT MATRIX FOR ATTRIBUTE # 6:

1 00000000 7 00000000 2 00000000 0 00000000 1 00000000 0 00000000 0 00000000
0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
0 00000000 4 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000
3 00000000 5 00000000 4 00000000 1 00000000 1 00000000 0 00000000 0 00000000
0 00000000 4 00000000 4 00000000 0 00000000 1 00000000 0 00000000 0 00000000
5 00000000 6 00000000 5 00000000 2 00000000 4 00000000 1 00000000 0 00000000
7 00000000 7 00000000 6 00000000 3 00000000 5 00000000 1 00000000 0 00000000

999999

= 22PROJECT WEIGHTS FOR ATTRIBUTE # 6(SAME ORDER AS NAMES):

0 05133471 0 02874743 0 03749487 0 14373717 0 07186858 0 28747433 0 35934290

= 23PROJECT MATRIX FOR ATTRIBUTE # 7:

1 00000000 3 00000000 0 00000000 0 00000000 0 00000000 0 00000000 4 00000000
0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
7 00000000 8 50000000 1 00000000 5 00000000 5 00000000 4 00000000 2 00000000
1 50000000 4 00000000 0 00000000 1 00000000 1 00000000 0 00000000 4 00000000
2 00000000 4 00000000 0 00000000 0 00000000 1 00000000 0 00000000 4 00000000
3 00000000 5 00000000 0 00000000 1 50000000 2 00000000 1 00000000 4 00000000
0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000

999999

= 24PROJECT WEIGHTS FOR ATTRIBUTE # 7(SAME ORDER AS NAMES):
 O 07947170 O 02641309 O 52830189 O 10366038 O 13207547 O 02641309
 = 25FINAL PROJECT WEIGHTS (SAME ORDER AS NAMES)
 O 08392933 O 02873009 O 23098684 O 10988273 O 07069643 O 20624015 O 25053436
 999999

```

-001NAME
COLBURN
-002ORGANIZATION:

-003PURPOSE:
5 MISSING PROJECT VALUES. REF 1

-004MODEL TYPE (1-5):
2
-005NUMBER OF PROJECTS(1-200):
7
-006NUMBER OF ATTRIBUTES(1- 20):
7
-007NUMBER AND NAME OF ATTRIBUTES
1 ACADEMIC FIELD
2 COMMUNICATIONS
3 HUMAN RELATIONS
4 ORGAN & MANAGEMENT
5 ACTIVITY LEVEL
6 EXP & PLACEMENT
7 RESUME PRESENTATION

999999
-008ATTRIBUTE MATRIX (N X N WHERE N IS # OF ATTRIBUTES):
1. 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2. 0.00000000 1.00000000 1.00000000 1.00000000 1.00000000 1.00000000 1.00000000
3. 0.00000000 0.00000000 1.00000000 0.00000000 0.00000000 0.00000000 0.00000000
4. 0.00000000 0.00000000 0.00000000 2.00000000 1.00000000 1.00000000 1.00000000
5. 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 1.00000000
6. 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 1.00000000 0.00000000
7. 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 1.00000000

999999
-009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES):
0. 0.4282635 0.09633974 0.12847966 0.19271947 0.07708780 0.38543895 0.07708780

-010NUMBER AND NAME OF PROJECTS:
1 APP 1
2 APP 2
3 APP 3
4 APP 4
5 APP 5
6 APP 6
7 APP 7

999999
- 11PROJECT MATRIX FOR ATTRIBUTE # 1:
1. 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
3. 0.00000000 1.00000000 0.00000000 0.00000000 1.00000000 2.00000000 0.00000000
5. 0.00000000 0.00000000 1.00000000 0.00000000 0.00000000 0.00000000 0.00000000
3. 0.00000000 0.00000000 0.00000000 0.00000000 1.00000000 2.00000000 0.00000000
1. 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
8. 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 7.00000000 0.00000000
4. 0.00000000 2.00000000 0.00000000 0.00000000 0.00000000 2.00000000 1.00000000

999999
- 12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES):
0. 0.4715127 0.05893910 0.23575638 0.06876227 0.05893910 0.41257367 0.11787819

- 13PROJECT MATRIX FOR ATTRIBUTE # 2:
1. 0.00000000 7.00000000 0.00000000 0.00000000 3.00000000 2.00000000 0.00000000
0. 0.00000000 1.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000

```

6. 00000000 9. 00000000 1. 00000000 3. 00000000 4. 00000000 4. 00000000
 0. 00000000 0. 00000000 0. 00000000 1. 00000000 2. 00000000 0. 00000000
 0. 00000000 5. 00000000 0. 00000000 0. 00000000 1. 00000000 0. 00000000
 0. 00000000 6. 00000000 0. 00000000 2. 00000000 3. 00000000 1. 00000000
 0. 00000000 7. 00000000 0. 00000000 3. 00000000 0. 00000000 0. 00000000
 0. 00000000 0. 00000000 0. 00000000 0. 00000000 0. 00000000 1. 00000000

999999

= 14PROJECT WEIGHTS FOR ATTRIBUTE # 2(SAME ORDER AS NAMES):

0. 08308606 0. 01780416 0. 49831632 0. 06231434 0. 08902077 0. 12462908 0. 12462908

= 15PROJECT MATRIX FOR ATTRIBUTE # 3:

1. 00000000 3. 00000000 0. 00000000 1. 00000000 2. 00000000 0. 00000000
 0. 00000000 1. 00000000 0. 00000000 0. 00000000 0. 00000000 0. 00000000
 3. 00000000 0. 00000000 1. 00000000 0. 00000000 0. 00000000 3. 00000000
 0. 00000000 0. 00000000 0. 00000000 1. 00000000 1. 00000000 0. 00000000
 0. 00000000 5. 00000000 0. 00000000 0. 00000000 1. 00000000 0. 00000000
 2. 00000000 6. 00000000 0. 00000000 3. 00000000 2. 00000000 1. 00000000
 0. 00000000 7. 00000000 0. 00000000 4. 00000000 0. 00000000 0. 00000000
 0. 00000000 0. 00000000 0. 00000000 0. 00000000 0. 00000000 1. 00000000

999999

= 16PROJECT WEIGHTS FOR ATTRIBUTE # 3(SAME ORDER AS NAMES):

0. 12345679 0. 02469136 0. 37037036 0. 07407407 0. 07407407 0. 14814815 0. 18518518

= 17PROJECT MATRIX FOR ATTRIBUTE # 4:

1. 00000000 7. 00000000 0. 00000000 4. 00000000 1. 00000000 2. 00000000
 0. 00000000 1. 00000000 0. 00000000 0. 00000000 0. 00000000 0. 00000000
 0. 00000000 0. 00000000 1. 00000000 2. 00000000 3. 00000000 1. 00000000
 0. 00000000 4. 00000000 0. 00000000 1. 00000000 1. 00000000 2. 00000000
 0. 00000000 4. 00000000 0. 00000000 0. 00000000 1. 00000000 0. 00000000
 0. 00000000 3. 00000000 0. 00000000 0. 00000000 2. 00000000 1. 00000000
 2. 00000000 5. 00000000 0. 00000000 0. 00000000 0. 00000000 2. 00000000
 0. 00000000 0. 00000000 0. 00000000 0. 00000000 0. 00000000 1. 00000000

999999

= 18PROJECT WEIGHTS FOR ATTRIBUTE # 4(SAME ORDER AS NAMES):

0. 21212122 0. 03030303 0. 13131316 0. 07575758 0. 07575758 0. 13131316 0. 30303031

= 19PROJECT MATRIX FOR ATTRIBUTE # 5:

1. 00000000 7. 00000000 0. 00000000 0. 00000000 0. 00000000 0. 00000000
 0. 00000000 1. 00000000 0. 00000000 0. 00000000 0. 00000000 0. 00000000
 5. 00000000 9. 00000000 1. 00000000 0. 00000000 6. 00000000 2. 00000000
 2. 00000000 6. 00000000 0. 00000000 1. 00000000 4. 00000000 0. 00000000
 3. 00000000 5. 00000000 0. 00000000 0. 00000000 1. 00000000 0. 00000000
 0. 00000000 0. 00000000 0. 00000000 2. 00000000 0. 00000000 0. 00000000
 4. 00000000 7. 00000000 0. 00000000 3. 00000000 0. 00000000 1. 00000000
 0. 00000000 0. 00000000 0. 00000000 0. 00000000 0. 00000000 0. 00000000

999999

= 20PROJECT WEIGHTS FOR ATTRIBUTE # 5(SAME ORDER AS NAMES):

0. 0642067 0. 01476015 0. 33210331 0. 08856089 0. 05335055 0. 17712177 0. 26568267

= 21PROJECT MATRIX FOR ATTRIBUTE # 6:

1. 00000000 7. 00000000 2. 00000000 0. 00000000 1. 00000000 0. 00000000
 0. 00000000 1. 00000000 0. 00000000 0. 00000000 0. 00000000 0. 00000000
 0. 00000000 0. 00000000 1. 00000000 0. 00000000 0. 00000000 0. 00000000
 3. 00000000 0. 00000000 4. 00000000 1. 00000000 1. 00000000 0. 00000000
 0. 00000000 0. 00000000 4. 00000000 0. 00000000 1. 00000000 0. 00000000
 0. 00000000 6. 00000000 5. 00000000 2. 00000000 4. 00000000 1. 00000000
 0. 00000000 7. 00000000 6. 00000000 3. 00000000 5. 00000000 1. 00000000
 0. 00000000 0. 00000000 0. 00000000 0. 00000000 0. 00000000 0. 00000000

999999

= 22PROJECT WEIGHTS FOR ATTRIBUTE # 6(SAME ORDER AS NAMES):

0. 07009346 0. 04672897 0. 05607477 0. 14018692 0. 07009346 0. 28037384 0. 33644861

= 23PROJECT MATRIX FOR ATTRIBUTE # 7:

1. 00000000 3. 00000000 0. 00000000 0. 00000000 0. 00000000 0. 00000000
 0. 00000000 1. 00000000 0. 00000000 0. 00000000 0. 00000000 0. 00000000
 7. 00000000 8. 30000000 1. 00000000 5. 00000000 4. 00000000 2. 00000000
 1. 30000000 0. 00000000 0. 00000000 1. 00000000 1. 00000000 0. 00000000
 2. 00000000 4. 00000000 0. 00000000 0. 00000000 1. 00000000 0. 00000000
 0. 00000000 0. 00000000 0. 00000000 0. 00000000 2. 00000000 1. 00000000
 0. 00000000 0. 00000000 0. 00000000 0. 00000000 0. 00000000 0. 00000000
 0. 00000000 0. 00000000 0. 00000000 0. 00000000 0. 00000000 1. 00000000

999999

= 24PROJECT WEIGHTS FOR ATTRIBUTE # 7(SAME ORDER AS NAMES):
 O. 07240390 O. 03962839 O. 50684130 O. 10136826 O. 10136826 O. 12671033 O. 03167758
 = 25FINAL PROJECT WEIGHTS: (SAME ORDER AS NAMES)
 O. 10448364 O. 03699770 O. 22120433 O. 10174116 O. 07431701 O. 20940103 O. 23185317
 999999

-001NAME:
COLBURN

-002ORGANIZATION:

-003PURPOSE:

3 MISSING PROJECT VALUES. REP 2

-004MODEL TYPE (1-3):

2

-005NUMBER OF PROJECTS(1-200):

7

-006NUMBER OF ATTRIBUTES(1- 20):

7

-007NUMBER AND NAME OF ATTRIBUTES

1 ACADEMIC FIELD

2 COMMUNICATIONS

3 HUMAN RELATIONS

4 ORGAN & MANAGEMENT

5 ACTIVITY LEVEL

6 EXP & PLACEMENT

7 RESUME PRESENTATION

999999

-008ATTRIBUTE MATRIX (N X N WHERE N IS # OF ATTRIBUTES):

1.	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
2.	0.0000000	1.0000000	0.0000000	1.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
3.	0.0000000	0.0000000	1.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
4.	0.0000000	0.0000000	0.0000000	2.0000000	0.0000000	1.0000000	0.0000000	0.0000000	0.0000000
5.	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	1.0000000	0.0000000	0.0000000
6.	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	1.0000000	0.0000000
7.	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	1.0000000

999999

-009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES):

0.04282655 0.09635974 0.12847966 0.19271947 0.07708780 0.38543895 0.07708780

-010NUMBER AND NAME OF PROJECTS:

1 APP1
2 APP2
3 APP3
4 APP4
5 APP5
6 APP6
7 APP7

999999

- 11PROJECT MATRIX FOR ATTRIBUTE # 1:

1.	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
2.	0.0000000	1.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
3.	0.0000000	0.0000000	1.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
4.	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
5.	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
6.	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
7.	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

999999

- 12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES):

0.06645370 0.03797469 0.13291140 0.08860760 0.06645370 0.53164560 0.07594937

- 13PROJECT MATRIX FOR ATTRIBUTE # 2:

1.	0.0000000	7.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
2.	0.0000000	1.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

6 00000000 0 00000000 1 00000000 3 00000000 5 00000000 4 00000000 4 00000000
 0 00000000 6 00000000 0 00000000 1 00000000 2 00000000 0 00000000 0 00000000
 0 00000000 3 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 3 00000000 1 00000000 0 00000000
 2 00000000 7 00000000 0 00000000 3 00000000 4 00000000 2 00000000 1 00000000

999999

= 14PROJECT WEIGHTS FOR ATTRIBUTE # 2(SAME ORDER AS NAMES):

0.08403362 0.01680672 0.50420165 0.10084034 0.04201681 0.12605041 0.12605041

= 15PROJECT MATRIX FOR ATTRIBUTE # 3:

1 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 8 00000000 1 00000000 3 00000000 0 00000000 3 00000000 2 00000000
 0 00000000 6 00000000 0 00000000 1 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 2 00000000 6 00000000 0 00000000 3 00000000 2 00000000 1 00000000 2 00000000
 3 00000000 7 00000000 0 00000000 4 00000000 3 00000000 0 00000000 1 00000000

999999

= 16PROJECT WEIGHTS FOR ATTRIBUTE # 3(SAME ORDER AS NAMES):

0.06930693 0.02970297 0.41584161 0.06930693 0.06930693 0.13861386 0.20792080

= 17PROJECT MATRIX FOR ATTRIBUTE # 4:

1 00000000 0 00000000 0 00000000 4 00000000 1 00000000 2 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 3 00000000 0 00000000 1 00000000 0 00000000 0 00000000 1 00000000 1 00000000
 0 00000000 4 00000000 0 00000000 1 00000000 0 00000000 2 00000000 0 00000000
 0 00000000 4 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 5 00000000 0 00000000 0 00000000 2 00000000 1 00000000 1 00000000
 2 00000000 5 00000000 0 00000000 0 00000000 3 00000000 2 00000000 1 00000000

999999

= 18PROJECT WEIGHTS FOR ATTRIBUTE # 4(SAME ORDER AS NAMES):

0.09493671 0.01898734 0.47468352 0.06329114 0.06329114 0.09493671 0.18987341

= 19PROJECT MATRIX FOR ATTRIBUTE # 5:

1 00000000 7 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 5 00000000 0 00000000 1 00000000 4 00000000 0 00000000 2 00000000 1 00000000
 2 00000000 6 00000000 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 5 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 3 00000000 6 00000000 0 00000000 2 00000000 0 00000000 1 00000000 0 00000000
 4 00000000 7 00000000 0 00000000 3 00000000 3 00000000 1 50000000 1 00000000

999999

= 20PROJECT WEIGHTS FOR ATTRIBUTE # 5(SAME ORDER AS NAMES):

0.06276151 0.01673640 0.33472803 0.08368201 0.08368201 0.16736402 0.25104603

= 21PROJECT MATRIX FOR ATTRIBUTE # 6:

1 00000000 7 00000000 2 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 4 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 3 00000000 0 00000000 4 00000000 1 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 4 00000000 4 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 5 00000000 6 00000000 5 00000000 0 00000000 4 00000000 1 00000000 0 00000000
 7 00000000 7 00000000 0 00000000 3 00000000 0 00000000 1 00000000 1 00000000

999999

= 22PROJECT WEIGHTS FOR ATTRIBUTE # 6(SAME ORDER AS NAMES):

0.05721097 0.01787843 0.03337306 0.13349225 0.07151371 0.28609485 0.40047678

= 23PROJECT MATRIX FOR ATTRIBUTE # 7:

1 00000000 3 00000000 0 00000000 0 00000000 0 00000000 0 00000000 4 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 2 00000000
 7 00000000 0 00000000 1 00000000 5 00000000 0 00000000 4 00000000 7 00000000
 1 50000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000 4 00000000
 2 00000000 4 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 3 00000000 5 00000000 0 00000000 0 00000000 2 00000000 1 00000000 4 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000

999999

- 24PROJECT WEIGHTS FOR ATTRIBUTE # 7(SAME ORDER AS NAMES):
 0.07497657 0.02624180 0.52483600 0.10496720 0.10496720 0.13120900 0.03280225
 - 25FINAL PROJECT WEIGHTS: (SAME ORDER AS NAMES)
 0.07081347 0.03092341 0.27831000 0.10060933 0.07010349 0.20429297 0.25494534
 999999

-001NAME
 COLBURN
 -002ORGANIZATION
 -003PURPOSE
 5 MISSING VALUES, REP 3

-004MODEL TYPE (1-5):
 2
 -005NUMBER OF PROJECTS(1-200):
 7
 -006NUMBER OF ATTRIBUTES(1- 20):
 7
 -007NUMBER AND NAME OF ATTRIBUTES
 1 ACADEMIC FIELD
 2 COMMUNICATIONS
 3 HUMAN RELATIONS
 4 ORGAN & MANAGEMENT
 5 ACTIVITY LEVEL
 6 EXP & PLACEMENT
 7 RESUME PRESENTATION

999999
 -008ATTRIBUTE MATRIX (N X N WHERE N IS # OF ATTRIBUTES):
 1 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
 2 0.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
 3 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000
 4 0.0000000 0.0000000 0.0000000 2.0000000 1.0000000 1.0000000 1.0000000
 5 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
 6 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 4.0000000 0.0000000
 7 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 3.0000000
 999999
 -009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES):
 0.04282635 0.09635974 0.12847966 0.19271947 0.07708780 0.38543895 0.07708780
 -010NUMBER AND NAME OF PROJECTS:
 1 APP1
 2 APP2
 3 APP3
 4 APP4
 5 APP5
 6 APP6
 7 APP7

999999
 - 11PROJECT MATRIX FOR ATTRIBUTE # 1:
 1 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
 3 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
 5 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000
 3 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
 1 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
 8 0.0000000 6.0000000 4.0000000 0.0000000 0.0000000 0.0000000 0.0000000
 4 0.0000000 2.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
 999999
 - 12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES):
 0.03112840 0.09338522 0.14007783 0.09338522 0.03501946 0.56031132 0.04669261
 - 13PROJECT MATRIX FOR ATTRIBUTE # 2:
 1 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000

0.0000000 9.0000000 1.0000000 3.0000000 0.0000000 4.0000000 4.0000000
 0.0000000 6.0000000 1.0000000 1.0000000 2.0000000 0.0000000 0.0000000
 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000
 0.0000000 6.0000000 0.0000000 2.0000000 3.0000000 1.0000000 0.0000000
 2.0000000 0.0000000 0.0000000 3.0000000 4.0000000 2.0000000 1.0000000
 999999

- 14PROJECT WEIGHTS FOR ATTRIBUTE # 2(SAME ORDER AS NAMES):

0.21032632 0.01754386 0.42103263 0.07017544 0.03508772 0.10326316 0.14035088

- 15PROJECT MATRIX FOR ATTRIBUTE # 3:

1.0000000 3.0000000 0.0000000 0.0000000 2.0000000 0.0000000 0.0000000
 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
 3.0000000 0.0000000 1.0000000 3.0000000 4.0000000 3.0000000 2.0000000
 0.0000000 6.0000000 0.0000000 1.0000000 1.0000000 0.0000000 0.0000000
 0.0000000 3.0000000 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000
 2.0000000 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000 2.0000000
 3.0000000 7.0000000 0.0000000 4.0000000 3.0000000 0.0000000 1.0000000
 999999

- 16PROJECT WEIGHTS FOR ATTRIBUTE # 3(SAME ORDER AS NAMES):

0.06944444 0.01388889 0.41666666 0.08333333 0.06944444 0.13888888 0.20833333

- 17PROJECT MATRIX FOR ATTRIBUTE # 4:

1.0000000 7.0000000 0.0000000 4.0000000 1.0000000 2.0000000 0.0000000
 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
 3.0000000 3.0000000 1.0000000 2.0000000 3.0000000 0.0000000 1.0000000
 0.0000000 0.0000000 0.0000000 1.0000000 1.0000000 2.0000000 0.0000000
 0.0000000 4.0000000 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000
 0.0000000 0.0000000 0.0000000 0.0000000 2.0000000 1.0000000 0.0000000
 2.0000000 3.0000000 0.0000000 0.0000000 0.0000000 2.0000000 1.0000000
 999999

- 18PROJECT WEIGHTS FOR ATTRIBUTE # 4(SAME ORDER AS NAMES):

0.10638298 0.04255319 0.31914896 0.10638298 0.10638298 0.21276596

- 19PROJECT MATRIX FOR ATTRIBUTE # 5:

1.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
 0.0000000 9.0000000 1.0000000 4.0000000 6.0000000 2.0000000 1.0000000
 2.0000000 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000
 0.0000000 5.0000000 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000
 3.0000000 6.0000000 0.0000000 2.0000000 0.0000000 1.0000000 0.0000000
 4.0000000 7.0000000 0.0000000 3.0000000 3.0000000 1.5000000 1.0000000
 999999

- 20PROJECT WEIGHTS FOR ATTRIBUTE # 5(SAME ORDER AS NAMES):

0.0568016 0.03643723 0.34008098 0.08302024 0.0368016 0.17004049 0.23506073

- 21PROJECT MATRIX FOR ATTRIBUTE # 6:

1.0000000 7.0000000 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000
 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
 0.0000000 4.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000
 0.0000000 3.0000000 0.0000000 1.0000000 1.0000000 0.0000000 0.0000000
 0.0000000 0.0000000 4.0000000 0.0000000 1.0000000 0.0000000 0.0000000
 5.0000000 0.0000000 0.0000000 2.0000000 4.0000000 1.0000000 0.0000000
 7.0000000 7.0000000 6.0000000 3.0000000 0.0000000 1.0000000 1.0000000
 999999

- 22PROJECT WEIGHTS FOR ATTRIBUTE # 6(SAME ORDER AS NAMES):

0.06006006 0.02402402 0.06006006 0.12012012 0.07907508 0.30030030 0.36036038

- 23PROJECT MATRIX FOR ATTRIBUTE # 7:

1.0000000 3.0000000 0.0000000 0.0000000 0.0000000 0.0000000 4.0000000
 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000 2.0000000
 7.0000000 8.5000000 1.0000000 0.0000000 0.0000000 4.0000000 7.0000000
 0.0000000 4.0000000 0.0000000 1.0000000 0.0000000 0.0000000 4.0000000
 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000 4.0000000
 3.0000000 0.0000000 0.0000000 1.5000000 2.0000000 1.0000000 0.0000000
 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000
 999999

= 24PROJECT WEIGHTS FOR ATTRIBUTE # 7(SAME ORDER AS NAMES):
 O. 07547170 O. 02641509 O. 52830189 O. 10566038 O. 10566038 O. 13207547 O. 02641509
 = 25FINAL PROJECT WEIGHTS: (SAME ORDER AS NAMES)
 O. 08438044 O. 02978010 O. 25170219 O. 10296828 O. 07575641 O. 21152270 O. 24388988
 999999

```

-001NAME:
-002ORGANIZATION:
-003PURPOSE:
  SIX MISSING ATTRIBUTE VALUES, REP 1

-004MODEL TYPE (1-3):
  2
-005NUMBER OF PROJECTS(1-200):
  7
-006NUMBER OF ATTRIBUTES(1- 20):
  7
-007NUMBER AND NAME OF ATTRIBUTES
  1 ACADEMIC FIELD
  2 COMMUNICATIONS
  3 HUMAN RELATIONS
  4 ORGAN & MANAGEMENT
  5 ACTIVITY LEVEL
  6 EXP & PLACEMENT
  7 RESUME PRESENTATION

999999
-008ATTRIBUTE MATRIX (N X N WHERE N IS # OF ATTRIBUTES):
  1. 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
  2. 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
  3. 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000
  4. 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000
  5. 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000
  6. 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000
  7. 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000

999999
-009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES):
  0.04048583 0.09109312 0.12145749 0.09109312 0.21862349 0.36437249 0.07287449
-010NUMBER AND NAME OF PROJECTS:
  1 APP1
  2 APP2
  3 APP3
  4 APP4
  5 APP5
  6 APP6
  7 APP7

999999
- 11PROJECT MATRIX FOR ATTRIBUTE # 1:
  1. 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
  3. 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
  3. 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000
  3. 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000
  1. 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000
  8. 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000
  4. 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000

999999
- 12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES):
  0.04086266 0.07943317 0.20431328 0.07943317 0.05107832 0.47673097 0.06810443
- 13PROJECT MATRIX FOR ATTRIBUTE # 2:
  1. 0.0000000 7.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
  0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000

```


6 00000000 9 00000000 1 00000000 5 00000000 5 00000000 4 00000000 4 00000000
 0 00000000 6 00000000 0 00000000 1 00000000 2 00000000 0 00000000 0 00000000
 0 00000000 5 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 6 00000000 0 00000000 2 00000000 3 00000000 1 00000000 0 00000000
 2 00000000 7 00000000 0 00000000 3 00000000 4 00000000 2 00000000 1 00000000

999999

= 14PROJECT WEIGHTS FOR ATTRIBUTE # 2(SAME ORDER AS NAMES):

0 08163265 0 02040816 0 48979992 0 08163265 0 04081633 0 12244898 0 16326530

= 15PROJECT MATRIX FOR ATTRIBUTE # 3:

1 00000000 5 00000000 0 00000000 1 00000000 2 00000000 0 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 3 00000000 8 00000000 1 00000000 5 00000000 6 00000000 3 00000000 2 00000000
 0 00000000 6 00000000 0 00000000 1 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 5 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 2 00000000 6 00000000 0 00000000 3 00000000 2 00000000 1 00000000 0 00000000
 3 00000000 7 00000000 0 00000000 4 00000000 3 00000000 0 00000000 1 00000000

999999

= 16PROJECT WEIGHTS FOR ATTRIBUTE # 3(SAME ORDER AS NAMES):

0 12345679 0 02645503 0 37037036 0 07407407 0 06172840 0 15873016 0 18518518

= 17PROJECT MATRIX FOR ATTRIBUTE # 4:

1 00000000 7 00000000 0 00000000 4 00000000 1 00000000 2 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 5 00000000 5 00000000 1 00000000 2 00000000 3 00000000 1 00000000 2 00000000
 0 00000000 4 00000000 0 00000000 1 00000000 1 00000000 2 00000000 0 00000000
 0 00000000 4 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 5 00000000 0 00000000 0 00000000 2 00000000 1 00000000 0 00000000
 2 00000000 5 00000000 0 00000000 0 00000000 3 00000000 2 00000000 1 00000000

999999

= 18PROJECT WEIGHTS FOR ATTRIBUTE # 4(SAME ORDER AS NAMES):

0 13043478 0 02608696 0 26086956 0 10434783 0 08695652 0 13043478 0 26086956

= 19PROJECT MATRIX FOR ATTRIBUTE # 5:

1 00000000 7 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 5 00000000 9 00000000 1 00000000 4 00000000 6 00000000 2 00000000 1 00000000
 2 00000000 6 00000000 0 00000000 1 00000000 4 00000000 0 00000000 0 00000000
 2 00000000 5 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 3 00000000 6 00000000 0 00000000 2 00000000 3 00000000 1 00000000 0 00000000
 4 00000000 7 00000000 0 00000000 3 00000000 3 00000000 1 50000000 1 00000000

999999

= 20PROJECT WEIGHTS FOR ATTRIBUTE # 5(SAME ORDER AS NAMES):

0 06382979 0 02836879 0 34042552 0 08310638 0 05673759 0 17021276 0 25531915

= 21PROJECT MATRIX FOR ATTRIBUTE # 6:

1 00000000 7 00000000 2 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 4 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 3 00000000 5 00000000 4 00000000 1 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 4 00000000 4 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 5 00000000 6 00000000 5 00000000 2 00000000 4 00000000 1 00000000 0 00000000
 7 00000000 7 00000000 6 00000000 3 00000000 5 00000000 1 00000000 1 00000000

999999

= 22PROJECT WEIGHTS FOR ATTRIBUTE # 6(SAME ORDER AS NAMES):

0 05133471 0 02874743 0 03749487 0 14373717 0 07186858 0 28747433 0 35934290

= 23PROJECT MATRIX FOR ATTRIBUTE # 7:

1 00000000 3 00000000 0 00000000 0 00000000 0 00000000 0 00000000 4 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 2 00000000
 7 00000000 8 50000000 1 00000000 5 00000000 5 00000000 4 00000000 7 00000000
 1 50000000 4 00000000 0 00000000 1 00000000 1 00000000 0 00000000 4 00000000
 2 00000000 4 00000000 0 00000000 1 00000000 1 00000000 0 00000000 4 00000000
 3 00000000 5 00000000 0 00000000 1 50000000 2 00000000 1 00000000 4 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000

999999

- 24PROJECT WEIGHTS FOR ATTRIBUTE # 7(SAME ORDER AS NAMES):
 O. 07347170 O. 02641509 O. 52830189 O. 10366038 O. 10366038 O. 13207547 O. 02641509
 - 25FINAL PROJECT WEIGHTS: (SAME ORDER AS NAMES)
 O. 07412660 O. 02926720 O. 23531081 O. 10783328 O. 06749361 O. 21320097 O. 25256360
 999999

```

-001NAME
-002ORGANIZATION
-003PURPOSE:
  SIX MISSING ATTRIBUTE VALUES, REP 2

-004MODEL TYPE (1-5):
  2
-005NUMBER OF PROJECTS(1-200):
  7
-006NUMBER OF ATTRIBUTES(1- 20):
  7
-007NUMBER AND NAME OF ATTRIBUTES
  1 ACADEMIC FIELD
  2 COMMUNICATIONS
  3 HUMAN RELATIONS
  4 ORGAN & MANAGEMENT
  5 ACTIVITY LEVEL
  6 EXP & PLACEMENT
  7 RESUME PRESENTATION

999999
-008ATTRIBUTE MATRIX (N X N WHERE N IS # OF ATTRIBUTES):
  1. 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
  2. 00000000 1 00000000 1 00000000 1 00000000 1 00000000 1 00000000
  3. 00000000 0 00000000 1 00000000 0 00000000 2 00000000 0 00000000
  4. 50000000 0 00000000 2 00000000 1 00000000 3 00000000 0 00000000
  5. 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
  6. 00000000 4 00000000 0 00000000 0 00000000 4 00000000 1 00000000
  7. 00000000 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000

999999
-009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES):
  0 04371585 0 09836065 0 09836065 0 09836065 0 04918033 0 39344260 0 21857923

-010NUMBER AND NAME OF PROJECTS:
  1 APP1
  2 APP2
  3 APP3
  4 APP4
  5 APP5
  6 APP6
  7 APP7

999999
- 11PROJECT MATRIX FOR ATTRIBUTE # 1:
  1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
  3 00000000 1 00000000 0 00000000 0 00000000 2 00000000 0 00000000
  5 00000000 5 00000000 1 00000000 3 00000000 4 00000000 0 00000000
  3 00000000 0 00000000 0 00000000 1 00000000 2 00000000 0 00000000
  1 00000000 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000
  8 00000000 6 00000000 4 00000000 6 00000000 7 00000000 1 00000000
  4 00000000 2 00000000 0 00000000 0 00000000 2 00000000 0 00000000

999999
- 12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES):
  0 04086266 0 07945517 0 20431328 0 07945517 0 05107832 0 47673097 0 06810443

- 13PROJECT MATRIX FOR ATTRIBUTE # 2:
  1 00000000 7 00000000 0 00000000 3 00000000 2 00000000 0 00000000
  0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000

```

6	0.00000000	9	0.00000000	1	0.00000000	5	0.00000000	5	0.00000000	4	0.00000000	4	0.00000000
0	0.00000000	6	0.00000000	0	0.00000000	1	0.00000000	2	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	3	0.00000000	0	0.00000000	0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	4	0.00000000	0	0.00000000	2	0.00000000	3	0.00000000	1	0.00000000	0	0.00000000
2	0.00000000	7	0.00000000	0	0.00000000	3	0.00000000	4	0.00000000	2	0.00000000	1	0.00000000

999999

= 14PROJECT WEIGHTS FOR ATTRIBUTE # 2(SAME ORDER AS NAMES):
 0.08163265 0.02040816 0.48979592 0.08163265 0.04081633 0.12244898 0.16326530

= 15PROJECT MATRIX FOR ATTRIBUTE # 3:

1	0.00000000	5	0.00000000	0	0.00000000	1	0.00000000	2	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000
3	0.00000000	8	0.00000000	1	0.00000000	5	0.00000000	6	0.00000000	3	0.00000000	2	0.00000000
0	0.00000000	6	0.00000000	0	0.00000000	1	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	5	0.00000000	0	0.00000000	0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000
2	0.00000000	6	0.00000000	0	0.00000000	3	0.00000000	2	0.00000000	1	0.00000000	2	0.00000000
3	0.00000000	7	0.00000000	0	0.00000000	4	0.00000000	3	0.00000000	0	0.00000000	1	0.00000000

999999

= 16PROJECT WEIGHTS FOR ATTRIBUTE # 3(SAME ORDER AS NAMES):
 0.12343679 0.02645503 0.37037036 0.07407407 0.06172840 0.15873016 0.18318318

= 17PROJECT MATRIX FOR ATTRIBUTE # 4:

1	0.00000000	7	0.00000000	0	0.00000000	4	0.00000000	1	0.00000000	2	0.00000000	0	0.00000000
0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000
5	0.00000000	5	0.00000000	1	0.00000000	2	0.00000000	3	0.00000000	1	0.00000000	1	0.00000000
0	0.00000000	4	0.00000000	0	0.00000000	1	0.00000000	1	0.00000000	2	0.00000000	0	0.00000000
0	0.00000000	4	0.00000000	0	0.00000000	0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	5	0.00000000	0	0.00000000	0	0.00000000	2	0.00000000	1	0.00000000	0	0.00000000
2	0.00000000	5	0.00000000	0	0.00000000	0	0.00000000	3	0.00000000	2	0.00000000	1	0.00000000

999999

= 18PROJECT WEIGHTS FOR ATTRIBUTE # 4(SAME ORDER AS NAMES):
 0.13043478 0.02608696 0.26086956 0.10434783 0.08695652 0.13043478 0.26086956

= 19PROJECT MATRIX FOR ATTRIBUTE # 5:

1	0.00000000	7	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000
5	0.00000000	9	0.00000000	1	0.00000000	4	0.00000000	6	0.00000000	2	0.00000000	1	0.00000000
2	0.00000000	6	0.00000000	0	0.00000000	1	0.00000000	4	0.00000000	0	0.00000000	0	0.00000000
2	0.00000000	5	0.00000000	0	0.00000000	0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000
3	0.00000000	6	0.00000000	0	0.00000000	2	0.00000000	3	0.00000000	1	0.00000000	0	0.00000000
4	0.00000000	7	0.00000000	0	0.00000000	3	0.00000000	3	0.00000000	1	0.00000000	1	0.00000000

999999

= 20PROJECT WEIGHTS FOR ATTRIBUTE # 5(SAME ORDER AS NAMES):
 0.06382979 0.02836879 0.34042112 0.08510638 0.05673759 0.17021276 0.25331915

= 21PROJECT MATRIX FOR ATTRIBUTE # 6:

1	0.00000000	7	0.00000000	2	0.00000000	0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	4	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000
3	0.00000000	5	0.00000000	4	0.00000000	1	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	4	0.00000000	4	0.00000000	0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000
5	0.00000000	6	0.00000000	5	0.00000000	2	0.00000000	4	0.00000000	1	0.00000000	0	0.00000000
7	0.00000000	7	0.00000000	6	0.00000000	3	0.00000000	5	0.00000000	1	0.00000000	1	0.00000000

999999

= 22PROJECT WEIGHTS FOR ATTRIBUTE # 6(SAME ORDER AS NAMES):
 0.05133471 0.02874743 0.05749487 0.14373717 0.07186858 0.28747433 0.35934290

= 23PROJECT MATRIX FOR ATTRIBUTE # 7:

1	0.00000000	3	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	4	0.00000000
0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	2	0.00000000
7	0.00000000	8	0.00000000	1	0.00000000	5	0.00000000	5	0.00000000	4	0.00000000	7	0.00000000
1	0.00000000	4	0.00000000	0	0.00000000	1	0.00000000	1	0.00000000	0	0.00000000	4	0.00000000
2	0.00000000	4	0.00000000	0	0.00000000	0	0.00000000	1	0.00000000	0	0.00000000	4	0.00000000
3	0.00000000	5	0.00000000	0	0.00000000	1	0.00000000	1	0.00000000	2	0.00000000	4	0.00000000
0	0.00000000	0	0.00000000	0	0.00000000	1	0.00000000	1	0.00000000	1	0.00000000	4	0.00000000

999999

= 24PROJECT WEIGHTS FOR ATTRIBUTE # 7(SAME ORDER AS NAMES):
 O 07947170 O 02641509 O 52830189 O 10566038 O 10566038 O 13207547 O 02641509
 = 25FINAL PROJECT WEIGHTS: (SAME ORDER AS NAMES)
 O 07462171 O 02912832 O 27403696 O 11288364 O 07903410 O 21167204 O 22262165
 999999

=001NAME:

=002ORGANIZATION

=003PURPOSE:

SIX MISSING ATTRIBUTE VALUES, REP 3

=004MODEL TYPE (1-3):

2

=005NUMBER OF PROJECTS(1-200):

7

=006NUMBER OF ATTRIBUTES(1- 20):

7

=007NUMBER AND NAME OF ATTRIBUTES

1 ACADEMIC FIELD

2 COMMUNICATIONS

3 HUMAN RELATIONS

4 ORGAN & MANAGEMENT

5 ACTIVITY LEVEL

6 EXP & PLACEMENT

7 RESUME PRESENTATION

999999

=008ATTRIBUTE MATRIX (N X N WHERE N IS # OF ATTRIBUTES):

1	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
0	0.0000000	1.0000000	0.0000000	1.0000000	0.0000000	0.0000000	0.0000000
0	0.0000000	0.0000000	1.0000000	0.0000000	0.0000000	0.0000000	0.0000000
4	5.0000000	0.0000000	2.0000000	1.0000000	0.0000000	0.0000000	0.0000000
0	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
0	0.0000000	4.0000000	0.0000000	3.0000000	0.0000000	5.0000000	1.0000000
5	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

999999

=009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES):

0 04907976 0.09202454 0.12269939 0.22085890 0.07361963 0.36809817 0.07361963

=010NUMBER AND NAME OF PROJECTS:

1 APP1

2 APP2

3 APP3

4 APP4

5 APP5

6 APP6

7 APP7

999999

= 11PROJECT MATRIX FOR ATTRIBUTE # 1:

1	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
3	0.0000000	1.0000000	0.0000000	1.0000000	0.0000000	0.0000000	0.0000000
5	0.0000000	5.0000000	1.0000000	0.0000000	0.0000000	0.0000000	0.0000000
3	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
1	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
8	0.0000000	6.0000000	4.0000000	0.0000000	6.0000000	7.0000000	0.0000000
4	0.0000000	2.0000000	0.0000000	0.0000000	2.0000000	0.0000000	1.0000000

999999

= 12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES):

0 04086266 0.07945317 0.20431328 0.07945317 0.03107832 0.47673097 0.06810443

= 13PROJECT MATRIX FOR ATTRIBUTE # 2:

1	0.0000000	7.0000000	0.0000000	0.0000000	3.0000000	2.0000000	0.0000000
0	0.0000000	1.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

6	00000000	9	00000000	1	00000000	3	00000000	5	00000000	4	00000000
0	00000000	6	00000000	0	00000000	1	00000000	2	00000000	0	00000000
0	00000000	3	00000000	0	00000000	0	00000000	1	00000000	0	00000000
0	00000000	6	00000000	0	00000000	2	00000000	3	00000000	1	00000000
2	00000000	7	00000000	0	00000000	3	00000000	4	00000000	2	00000000

999999
 - 14PROJECT WEIGHTS FOR ATTRIBUTE # 2(SAME ORDER AS NAMES):
 0.08163265 0.02040816 0.48979392 0.08163265 0.04081633 0.12244898 0.16326530

- 15PROJECT MATRIX FOR ATTRIBUTE # 3:

1	00000000	5	00000000	0	00000000	1	00000000	2	00000000	0	00000000
0	00000000	1	00000000	0	00000000	0	00000000	0	00000000	0	00000000
3	00000000	8	00000000	1	00000000	3	00000000	6	00000000	3	00000000
0	00000000	4	00000000	0	00000000	1	00000000	1	00000000	0	00000000
0	00000000	5	00000000	0	00000000	0	00000000	1	00000000	0	00000000
2	00000000	6	00000000	0	00000000	3	00000000	2	00000000	1	00000000
3	00000000	7	00000000	0	00000000	4	00000000	3	00000000	0	00000000

999999
 - 16PROJECT WEIGHTS FOR ATTRIBUTE # 3(SAME ORDER AS NAMES):
 0.12345679 0.02645303 0.37037036 0.07407407 0.06172840 0.15873016 0.18518518

- 17PROJECT MATRIX FOR ATTRIBUTE # 4:

1	00000000	7	00000000	0	00000000	4	00000000	1	00000000	2	00000000
0	00000000	1	00000000	0	00000000	0	00000000	0	00000000	0	00000000
3	00000000	5	00000000	1	00000000	2	00000000	3	00000000	1	00000000
0	00000000	4	00000000	0	00000000	1	00000000	1	00000000	2	00000000
0	00000000	4	00000000	0	00000000	0	00000000	1	00000000	0	00000000
0	00000000	5	00000000	0	00000000	0	00000000	2	00000000	1	00000000
2	00000000	6	00000000	0	00000000	0	00000000	3	00000000	2	00000000

999999
 - 18PROJECT WEIGHTS FOR ATTRIBUTE # 4(SAME ORDER AS NAMES):
 0.13043478 0.02608696 0.26086956 0.10434783 0.08695652 0.13043478 0.26086956

- 19PROJECT MATRIX FOR ATTRIBUTE # 5:

1	00000000	7	00000000	0	00000000	0	00000000	0	00000000	0	00000000
0	00000000	1	00000000	0	00000000	0	00000000	0	00000000	0	00000000
3	00000000	9	00000000	1	00000000	4	00000000	6	00000000	2	00000000
2	00000000	6	00000000	0	00000000	1	00000000	4	00000000	0	00000000
2	00000000	5	00000000	0	00000000	0	00000000	1	00000000	0	00000000
3	00000000	6	00000000	0	00000000	2	00000000	3	00000000	1	00000000
4	00000000	7	00000000	0	00000000	3	00000000	3	00000000	1	00000000

999999
 - 20PROJECT WEIGHTS FOR ATTRIBUTE # 5(SAME ORDER AS NAMES):
 0.06382979 0.02836879 0.34042552 0.08510638 0.05673759 0.17021276 0.25531915

- 21PROJECT MATRIX FOR ATTRIBUTE # 6:

1	00000000	7	00000000	2	00000000	0	00000000	1	00000000	0	00000000
0	00000000	1	00000000	0	00000000	0	00000000	0	00000000	0	00000000
0	00000000	4	00000000	1	00000000	0	00000000	0	00000000	0	00000000
3	00000000	5	00000000	4	00000000	1	00000000	1	00000000	0	00000000
0	00000000	4	00000000	0	00000000	0	00000000	1	00000000	0	00000000
5	00000000	6	00000000	5	00000000	2	00000000	4	00000000	1	00000000
7	00000000	7	00000000	6	00000000	3	00000000	5	00000000	1	00000000

999999
 - 22PROJECT WEIGHTS FOR ATTRIBUTE # 6(SAME ORDER AS NAMES):
 0.03133471 0.02874743 0.03749487 0.14373717 0.07186858 0.28747433 0.35934290

- 23PROJECT MATRIX FOR ATTRIBUTE # 7:

1	00000000	3	00000000	0	00000000	0	00000000	0	00000000	0	00000000
0	00000000	1	00000000	0	00000000	0	00000000	0	00000000	0	00000000
7	00000000	8	30000000	1	00000000	3	00000000	5	00000000	4	00000000
1	30000000	4	00000000	0	00000000	1	00000000	1	00000000	0	00000000
2	00000000	4	00000000	0	00000000	0	00000000	1	00000000	0	00000000
3	00000000	5	00000000	0	00000000	1	30000000	2	00000000	1	00000000
0	00000000	0	00000000	0	00000000	0	00000000	0	00000000	0	00000000

999999

= 24PROJECT WEIGHTS FOR ATTRIBUTE # 7(SAME ORDER AS NAMES):
 0 07547170 0 02641509 0 52830189 0 10566038 0 13207547 0 02641509
 = 25FINAL PROJECT WEIGHTS (SAME ORDER AS NAMES)
 0 08262303 0 02940029 0 24327964 0 11030042 0 07145233 0 21102306 0 23171909
 999999


```

-001NAME:
COLBURN
-002ORGANIZATION:
-003PURPOSE:
6 MISSING PROJECT VALUES, REP 1

-004MODEL TYPE (1-3):
2
-005NUMBER OF PROJECTS(1-200):
7
-006NUMBER OF ATTRIBUTES(1- 20):
7
-007NUMBER AND NAME OF ATTRIBUTES
1 ACADEMIC FIELD
2 COMMUNICATIONS
3 HUMAN RELATIONS
4 ORGAN & MANAGEMENT
5 ACTIVITY LEVEL
6 EXP & PLACEMENT
7 RESUME PRESENTATION

999999
-008ATTRIBUTE MATRIX (N X N WHERE N IS # OF ATTRIBUTES):
1 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2 0.00000000 1.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
3 0.00000000 0.00000000 1.00000000 0.00000000 0.00000000 0.00000000 0.00000000
4 0.00000000 0.00000000 0.00000000 1.00000000 0.00000000 0.00000000 0.00000000
5 0.00000000 0.00000000 0.00000000 0.00000000 1.00000000 0.00000000 0.00000000
6 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 1.00000000 0.00000000
7 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 1.00000000

999999
-009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES):
0 0.4282635 0.09635974 0.12847966 0.1921947 0.07708780 0.38543895 0.07708780
-010NUMBER AND NAME OF PROJECTS:
1 APP1
2 APP2
3 APP3
4 APP4
5 APP5
6 APP6
7 APP7

999999
-011PROJECT MATRIX FOR ATTRIBUTE # 1:
1 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2 0.00000000 1.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
3 0.00000000 0.00000000 1.00000000 0.00000000 0.00000000 0.00000000 0.00000000
4 0.00000000 0.00000000 0.00000000 1.00000000 0.00000000 0.00000000 0.00000000
5 0.00000000 0.00000000 0.00000000 0.00000000 1.00000000 0.00000000 0.00000000
6 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 1.00000000 0.00000000
7 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 1.00000000

999999
-012PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES):
0 0.2608696 0.07826087 0.13043478 0.08693632 0.03217392 0.52173913 0.10434783
-013PROJECT MATRIX FOR ATTRIBUTE # 2:
1 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2 0.00000000 1.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000

```

6	0.00000000	9	0.00000000	1	0.00000000	5	0.00000000	4	0.00000000	4	0.00000000
0	0.00000000	0	0.00000000	0	0.00000000	1	0.00000000	2	0.00000000	0	0.00000000
0	0.00000000	3	0.00000000	0	0.00000000	0	0.00000000	1	0.00000000	0	0.00000000
0	0.00000000	0	0.00000000	0	0.00000000	3	0.00000000	3	0.00000000	1	0.00000000
0	0.00000000	7	0.00000000	0	0.00000000	3	0.00000000	4	0.00000000	2	0.00000000

999999

= 14PROJECT WEIGHTS FOR ATTRIBUTE # 2(SAME ORDER AS NAMES):

0.07667032 0.02628697 0.46002191 0.09200438 0.04600219 0.11500348 0.18400876

= 13PROJECT MATRIX FOR ATTRIBUTE # 3:

1	0.00000000	5	0.00000000	0	0.00000000	2	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	8	0.00000000	1	0.00000000	5	0.00000000	6	0.00000000	3	0.00000000
0	0.00000000	0	0.00000000	0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	5	0.00000000	0	0.00000000	1	0.00000000	1	0.00000000	0	0.00000000
0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000
2	0.00000000	6	0.00000000	0	0.00000000	0	0.00000000	2	0.00000000	2	0.00000000
0	0.00000000	7	0.00000000	0	0.00000000	0	0.00000000	3	0.00000000	0	0.00000000

999999

= 16PROJECT WEIGHTS FOR ATTRIBUTE # 3(SAME ORDER AS NAMES):

0.12820314 0.02564103 0.38461539 0.07623308 0.06410237 0.12820514 0.19230770

= 17PROJECT MATRIX FOR ATTRIBUTE # 4:

1	0.00000000	7	0.00000000	0	0.00000000	4	0.00000000	1	0.00000000	2	0.00000000
0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000
5	0.00000000	0	0.00000000	1	0.00000000	3	0.00000000	3	0.00000000	1	0.00000000
0	0.00000000	0	0.00000000	0	0.00000000	1	0.00000000	0	0.00000000	2	0.00000000
0	0.00000000	4	0.00000000	0	0.00000000	1	0.00000000	1	0.00000000	0	0.00000000
0	0.00000000	5	0.00000000	0	0.00000000	0	0.00000000	2	0.00000000	1	0.00000000
2	0.00000000	5	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000

999999

= 18PROJECT WEIGHTS FOR ATTRIBUTE # 4(SAME ORDER AS NAMES):

0.14762741 0.02108963 0.29525483 0.03690685 0.09841828 0.10544816 0.29525483

= 19PROJECT MATRIX FOR ATTRIBUTE # 5:

1	0.00000000	7	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	9	0.00000000	1	0.00000000	4	0.00000000	6	0.00000000	2	0.00000000
2	0.00000000	0	0.00000000	0	0.00000000	1	0.00000000	4	0.00000000	0	0.00000000
2	0.00000000	0	0.00000000	0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000
3	0.00000000	6	0.00000000	0	0.00000000	2	0.00000000	3	0.00000000	1	0.00000000
4	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	1	0.00000000

999999

= 20PROJECT WEIGHTS FOR ATTRIBUTE # 5(SAME ORDER AS NAMES):

0.03714286 0.02857143 0.34285712 0.08371428 0.03714286 0.17142856 0.23714284

= 21PROJECT MATRIX FOR ATTRIBUTE # 6:

1	0.00000000	7	0.00000000	2	0.00000000	0	0.00000000	1	0.00000000	0	0.00000000
0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	4	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	5	0.00000000	0	0.00000000	1	0.00000000	1	0.00000000	0	0.00000000
0	0.00000000	0	0.00000000	4	0.00000000	0	0.00000000	1	0.00000000	0	0.00000000
5	0.00000000	6	0.00000000	5	0.00000000	2	0.00000000	5	0.00000000	1	0.00000000
0	0.00000000	0	0.00000000	6	0.00000000	0	0.00000000	5	0.00000000	0	0.00000000

999999

= 22PROJECT WEIGHTS FOR ATTRIBUTE # 6(SAME ORDER AS NAMES):

0.03797102 0.02898551 0.03797102 0.14492753 0.07246377 0.28983506 0.34782609

= 23PROJECT MATRIX FOR ATTRIBUTE # 7:

1	0.00000000	3	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	2	0.00000000
7	0.00000000	0	0.00000000	1	0.00000000	0	0.00000000	5	0.00000000	7	0.00000000
0	0.00000000	4	0.00000000	0	0.00000000	1	0.00000000	0	0.00000000	4	0.00000000
2	0.00000000	4	0.00000000	0	0.00000000	1	0.00000000	0	0.00000000	4	0.00000000
0	0.00000000	0	0.00000000	0	0.00000000	1	0.00000000	1	0.00000000	4	0.00000000
0	0.00000000	0	0.00000000	0	0.00000000	1	0.00000000	2	0.00000000	4	0.00000000

999999

* 24PROJECT WEIGHTS FOR ATTRIBUTE # 7(SAME ORDER AS NAMES)
 O 07547170 O 02641509 O 52830189 O 10566038 O 13207547 O 02641509
 * 25FINAL PROJECT WEIGHTS (SAME ORDER AS NAMES)
 O 08399483 O 02865432 O 24573030 O 10019866 O 07435068 O 20533775 O 25973344
 999999

-001NAME
COLBURN
-002ORGANIZATION:

-003PURPOSE:
6 MISSING VALUES. REP 2

-004MODEL TYPE (1-5):

2
-005NUMBER OF PROJECTS(1-200):

7
-006NUMBER OF ATTRIBUTES(1- 20):

7

-007NUMBER AND NAME OF ATTRIBUTES

- 1 ACADEMIC FIELD
- 2 COMMUNICATIONS
- 3 HUMAN RELATIONS
- 4 ORGAN & MANAGEMENT
- 5 ACTIVITY LEVEL
- 6 EXP & PLACEMENT
- 7 RESUME PRESENTATION

999999

-008ATTRIBUTE MATRIX (N X N WHERE N IS # OF ATTRIBUTES):

1	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
2	0.0000000	1.0000000	0.0000000	1.0000000	0.0000000	0.0000000	0.0000000
3	0.0000000	0.0000000	1.0000000	0.0000000	0.0000000	0.0000000	0.0000000
4	0.0000000	0.0000000	0.0000000	2.0000000	1.0000000	0.0000000	0.0000000
5	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	1.0000000	0.0000000
6	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	1.0000000
7	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

999999

-009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES):

0 04282633 0 09633974 0 12847966 0 19271947 0 07708780 0 38543895 0 07708780

-010NUMBER AND NAME OF PROJECTS:

- 1 APP 1
- 2 APP 2
- 3 APP 3
- 4 APP 4
- 5 APP 5
- 6 APP 6
- 7 APP 7

999999

- 11PROJECT MATRIX FOR ATTRIBUTE # 1:

1	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
3	0.0000000	1.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
0	0.0000000	0.0000000	0.0000000	1.0000000	0.0000000	0.0000000	0.0000000
3	0.0000000	0.0000000	0.0000000	0.0000000	1.0000000	0.0000000	0.0000000
1	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	1.0000000	0.0000000
8	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	1.0000000
0	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

999999

- 12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES):

0 05236908 0 06982543 0 23940149 0 07980050 0 05985037 0 41895261 0 07980050

- 13PROJECT MATRIX FOR ATTRIBUTE # 2:

1	0.0000000	7.0000000	0.0000000	0.0000000	3.0000000	2.0000000	0.0000000
0	0.0000000	1.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

6	0.00000000	9	0.00000000	1	0.00000000	3	0.00000000	5	0.00000000	4	0.00000000	4	0.00000000
0	0.00000000	0	0.00000000	0	0.00000000	1	0.00000000	2	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	6	0.00000000	0	0.00000000	2	0.00000000	3	0.00000000	1	0.00000000	0	0.00000000
0	0.00000000	7	0.00000000	0	0.00000000	3	0.00000000	0	0.00000000	0	0.00000000	1	0.00000000

999999

= 14PROJECT WEIGHTS FOR ATTRIBUTE # 2(SAME ORDER AS NAMES):

0 0.08493632 0.02173913 0.32173913 0.06521739 0.04347826 0.13043478 0.13043478

= 15PROJECT MATRIX FOR ATTRIBUTE # 3:

1	0.00000000	5	0.00000000	0	0.00000000	1	0.00000000	2	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000
3	0.00000000	0	0.00000000	1	0.00000000	0	0.00000000	6	0.00000000	3	0.00000000	2	0.00000000
0	0.00000000	6	0.00000000	0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	5	0.00000000	0	0.00000000	0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000
2	0.00000000	0	0.00000000	0	0.00000000	3	0.00000000	0	0.00000000	1	0.00000000	2	0.00000000
3	0.00000000	7	0.00000000	0	0.00000000	4	0.00000000	0	0.00000000	0	0.00000000	1	0.00000000

999999

= 16PROJECT WEIGHTS FOR ATTRIBUTE # 3(SAME ORDER AS NAMES):

0 0.07168459 0.01433692 0.43010750 0.05376344 0.07168459 0.14336918 0.21505375

= 17PROJECT MATRIX FOR ATTRIBUTE # 4:

1	0.00000000	7	0.00000000	0	0.00000000	4	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000
5	0.00000000	5	0.00000000	1	0.00000000	2	0.00000000	3	0.00000000	1	0.00000000	1	0.00000000
0	0.00000000	0	0.00000000	0	0.00000000	1	0.00000000	1	0.00000000	0	0.00000000	2	0.00000000
0	0.00000000	4	0.00000000	0	0.00000000	1	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	1	0.00000000	1	0.00000000
2	0.00000000	5	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	2	0.00000000

999999

= 18PROJECT WEIGHTS FOR ATTRIBUTE # 4(SAME ORDER AS NAMES):

0 0.08771930 0.0308772 0.26315790 0.08771930 0.08771930 0.26315790 0.17543860

= 19PROJECT MATRIX FOR ATTRIBUTE # 5:

1	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000
5	0.00000000	0	0.00000000	1	0.00000000	4	0.00000000	4	0.00000000	2	0.00000000	1	0.00000000
0	0.00000000	6	0.00000000	0	0.00000000	1	0.00000000	4	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000
3	0.00000000	6	0.00000000	0	0.00000000	0	0.00000000	3	0.00000000	1	0.00000000	0	0.00000000
4	0.00000000	0	0.00000000	0	0.00000000	3	0.00000000	3	0.00000000	1	0.00000000	1	0.00000000

999999

= 20PROJECT WEIGHTS FOR ATTRIBUTE # 5(SAME ORDER AS NAMES):

0 0.06474821 0.01438849 0.34532374 0.08633094 0.03755396 0.17266187 0.25899282

= 21PROJECT MATRIX FOR ATTRIBUTE # 6:

1	0.00000000	7	0.00000000	2	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000
3	0.00000000	5	0.00000000	4	0.00000000	1	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000
5	0.00000000	6	0.00000000	5	0.00000000	2	0.00000000	4	0.00000000	1	0.00000000	0	0.00000000
7	0.00000000	7	0.00000000	6	0.00000000	6	0.00000000	5	0.00000000	0	0.00000000	1	0.00000000

999999

= 22PROJECT WEIGHTS FOR ATTRIBUTE # 6(SAME ORDER AS NAMES):

0 0.04986702 0.04634256 0.03585106 0.14960106 0.06981383 0.27923533 0.34906915

= 23PROJECT MATRIX FOR ATTRIBUTE # 7:

1	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	4	0.00000000
0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	2	0.00000000
7	0.00000000	0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	7	0.00000000
1	5.00000000	4	0.00000000	0	0.00000000	1	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000
2	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	1	0.00000000	0	0.00000000	4	0.00000000
3	0.00000000	5	0.00000000	0	0.00000000	1	5.00000000	2	0.00000000	1	0.00000000	4	0.00000000
0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	1	0.00000000

999999

* 24PROJECT WEIGHTS FOR ATTRIBUTE # 7(SAME ORDER AS NAMES)
 O 07289294 O 02733485 O 51025057 O 10933941 O 10933941 O 13667427 O 03416857
 * 25FINAL PROJECT WEIGHTS (SAME ORDER AS NAMES)
 O 06656827 O 03484492 O 25398463 O 10626052 O 07264239 O 23112857 O 23457073
 999999

```

*001NAME
COLBURN
*002ORGANIZATION

*003PURPOSE:
6 MISSING PROJECT VALUES, REP 3

*004MODEL TYPE (1-5):
2
*005NUMBER OF PROJECTS(1-200):
7
*006NUMBER OF ATTRIBUTES(1- 20):
7
*007NUMBER AND NAME OF ATTRIBUTES
1 ACADEMIC FIELD
2 COMMUNICATIONS
3 HUMAN RELATIONS
4 ORGAN & MANAGEMENT
5 ACTIVITY LEVEL
6 EXP & PLACEMENT
7 RESUME PRESENTATION

999999
*008ATTRIBUTE MATRIX (N X N WHERE N IS # OF ATTRIBUTES):
1 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
2 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
3 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000
4 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000
5 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000
6 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000
7 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000

999999
*009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES):
0 0.4282635 0 0.9633974 0 1.2847966 0 1.9271947 0 0.7708780 0 0.38543895 0 0.7708780

*010NUMBER AND NAME OF PROJECTS:
1 APP1
2 APP2
3 APP3
4 APP4
5 APP5
6 APP6
7 APP7

999999
* 11PROJECT MATRIX FOR ATTRIBUTE # 1:
1 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
3 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
5 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000
3 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000
1 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000
0 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000
4 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000

999999
* 12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES)
0 0.0061225 0 0.7142857 0 2.1428572 0 0.7142857 0 0.6122449 0 4.2857143 0 1.2244899

* 13PROJECT MATRIX FOR ATTRIBUTE # 2:
1 0.0000000 7.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
0 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000

```

6 00000000 0 00000000 1 00000000 3 00000000 3 00000000 4 00000000 4 00000000
0 00000000 0 00000000 0 00000000 1 00000000 2 00000000 0 00000000 0 00000000
0 00000000 5 00000000 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000
0 00000000 6 00000000 0 00000000 2 00000000 3 00000000 1 00000000 0 00000000
0 00000000 7 00000000 0 00000000 3 00000000 0 00000000 2 00000000 1 00000000

999999

- 14PROJECT WEIGHTS FOR ATTRIBUTE # 2(SAME ORDER AS NAMES):

0 08009134 0 01716247 0 48034919 0 09610984 0 08581236 0 12013730 0 12013730

- 15PROJECT MATRIX FOR ATTRIBUTE # 3:

1 00000000 0 00000000 0 00000000 1 00000000 2 00000000 0 00000000 0 00000000
0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
3 00000000 8 00000000 1 00000000 0 00000000 6 00000000 0 00000000 2 00000000
0 00000000 6 00000000 0 00000000 1 00000000 1 00000000 0 00000000 0 00000000
0 00000000 5 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
0 00000000 6 00000000 0 00000000 4 00000000 2 00000000 1 00000000 0 00000000
3 00000000 7 00000000 0 00000000 4 00000000 3 00000000 0 00000000 1 00000000

999999

- 16PROJECT WEIGHTS FOR ATTRIBUTE # 3(SAME ORDER AS NAMES):

0 12698413 0 02721089 0 38095239 0 04761905 0 06349207 0 16326330 0 19047619

- 17PROJECT MATRIX FOR ATTRIBUTE # 4:

1 00000000 7 00000000 0 00000000 0 00000000 0 00000000 1 00000000 2 00000000
0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
3 00000000 5 00000000 1 00000000 2 00000000 3 00000000 1 00000000 1 00000000
0 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000
0 00000000 4 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
0 00000000 5 00000000 0 00000000 0 00000000 2 00000000 1 00000000 0 00000000
0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 3 00000000 2 00000000

999999

- 18PROJECT WEIGHTS FOR ATTRIBUTE # 4(SAME ORDER AS NAMES):

0 03660377 0 02358491 0 28301886 0 14150943 0 09433962 0 11792453 0 28301886

- 19PROJECT MATRIX FOR ATTRIBUTE # 5:

1 00000000 7 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
5 00000000 9 00000000 1 00000000 4 00000000 0 00000000 0 00000000 0 00000000
2 00000000 6 00000000 0 00000000 1 00000000 4 00000000 0 00000000 0 00000000
0 00000000 5 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
3 00000000 6 00000000 0 00000000 0 00000000 3 00000000 1 00000000 0 00000000
0 00000000 7 00000000 0 00000000 3 00000000 3 00000000 1 50000000 1 00000000

999999

- 20PROJECT WEIGHTS FOR ATTRIBUTE # 5(SAME ORDER AS NAMES):

0 06431613 0 03225807 0 32258064 0 08064316 0 06431613 0 19354840 0 24193549

- 21PROJECT MATRIX FOR ATTRIBUTE # 6:

1 00000000 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
0 00000000 4 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000
0 00000000 5 00000000 4 00000000 1 00000000 1 00000000 0 00000000 0 00000000
0 00000000 4 00000000 4 00000000 0 00000000 1 00000000 1 00000000 0 00000000
3 00000000 0 00000000 5 00000000 2 00000000 4 00000000 1 00000000 0 00000000
0 00000000 7 00000000 6 00000000 0 00000000 5 00000000 1 00000000 1 00000000

999999

- 22PROJECT WEIGHTS FOR ATTRIBUTE # 6(SAME ORDER AS NAMES):

0 06217617 0 03108808 0 05181347 0 15344042 0 07772021 0 31088084 0 31088084

- 23PROJECT MATRIX FOR ATTRIBUTE # 7:

1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 2 00000000
0 00000000 8 50000000 1 00000000 5 00000000 5 00000000 4 00000000 7 00000000
0 00000000 4 00000000 0 00000000 1 00000000 1 00000000 0 00000000 4 00000000
2 00000000 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000 4 00000000
3 00000000 5 00000000 0 00000000 0 00000000 2 00000000 1 00000000 4 00000000
0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000

999999

* 24PROJECT WEIGHTS FOR ATTRIBUTE # 7(SAME ORDER AS NAMES)
 O 04355066 O 06148328 O 52260792 O 10452159 O 10452159 O 13065198 O 03266300
 = 25FINAL PROJECT WEIGHTS: (SAME ORDER AS NAMES)
 O 06854790 O 03196300 O 24409525 O 11989675 O 08021656 O 21845075 O 23682982
 999999

```

=001NAME.
=002ORGANIZATION.
=003PURPOSE:
EIGHT MISSING ATTRIBUTE VALUES, REP 1

=004MODEL TYPE (1-3):
2
=005NUMBER OF PROJECTS(1-200):
7
=006NUMBER OF ATTRIBUTES(1- 20):
7
=007NUMBER AND NAME OF ATTRIBUTES
1 ACADEMIC FIELD
2 COMMUNICATIONS
3 HUMAN RELATIONS
4 ORGAN & MANAGEMENT
5 ACTIVITY LEVEL
6 EXP & PLACEMENT
7 RESUME PRESENTATION

999999
=008ATTRIBUTE MATRIX (N X N WHERE N IS # OF ATTRIBUTES):
1 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
2 0.0000000 1.0000000 1.0000000 1.0000000 0.0000000 0.0000000 0.0000000
3 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000
4 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000
5 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000
6 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000
7 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000

999999
=009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES):
0.04807692 0.10817307 0.14423077 0.10817307 0.08653846 0.43269229 0.07211538
=010NUMBER AND NAME OF PROJECTS:
1 APP1
2 APP2
3 APP3
4 APP4
5 APP5
6 APP6
7 APP7

999999
= 11PROJECT MATRIX FOR ATTRIBUTE # 1.
1 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
3 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
3 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000
1 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000
8 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
4 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000

999999
= 12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES):
0.04086266 0.07945317 0.20431328 0.07945317 0.03107832 0.47673097 0.06810443
= 13PROJECT MATRIX FOR ATTRIBUTE # 2
1 0.0000000 7.0000000 0.0000000 0.0000000 0.0000000 2.0000000 0.0000000
0 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000

```

6 00000000 9 00000000 1 00000000 3 00000000 3 00000000 4 00000000 4 00000000
 0 00000000 6 00000000 0 00000000 1 00000000 2 00000000 0 00000000 0 00000000
 0 00000000 5 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 6 00000000 0 00000000 2 00000000 3 00000000 1 00000000 0 00000000
 2 00000000 7 00000000 0 00000000 3 00000000 4 00000000 2 00000000 1 00000000
 999999
 = 14PROJECT HEIGHTS FOR ATTRIBUTE # 2(SAME ORDER AS NAMES):
 0 08163265 0 02040816 0 48979592 0 08163265 0 04081633 0 12244858 0 16326530
 = 15PROJECT MATRIX FOR ATTRIBUTE # 3:
 1 00000000 3 00000000 0 00000000 1 00000000 2 00000000 0 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 3 00000000 8 00000000 1 00000000 1 00000000 5 00000000 6 00000000 3 00000000
 0 00000000 6 00000000 0 00000000 1 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 5 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 2 00000000 6 00000000 0 00000000 3 00000000 2 00000000 1 00000000 0 00000000
 3 00000000 7 00000000 0 00000000 4 00000000 3 00000000 0 00000000 1 00000000
 999999
 = 16PROJECT HEIGHTS FOR ATTRIBUTE # 3(SAME ORDER AS NAMES):
 0 12345679 0 02645503 0 37037036 0 07407407 0 06172840 0 13873016 0 18518518
 = 17PROJECT MATRIX FOR ATTRIBUTE # 4:
 1 00000000 7 00000000 0 00000000 4 00000000 1 00000000 2 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 5 00000000 5 00000000 1 00000000 2 00000000 3 00000000 1 00000000 1 00000000
 0 00000000 4 00000000 0 00000000 1 00000000 1 00000000 2 00000000 0 00000000
 0 00000000 4 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 5 00000000 0 00000000 0 00000000 2 00000000 1 00000000 0 00000000
 2 00000000 5 00000000 0 00000000 0 00000000 3 00000000 2 00000000 1 00000000
 999999
 = 18PROJECT HEIGHTS FOR ATTRIBUTE # 4(SAME ORDER AS NAMES):
 0 13043478 0 02608696 0 26086956 0 10434783 0 08695652 0 13043478 0 26086956
 = 19PROJECT MATRIX FOR ATTRIBUTE # 5:
 1 00000000 7 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 5 00000000 9 00000000 1 00000000 4 00000000 6 00000000 2 00000000 1 00000000
 2 00000000 6 00000000 0 00000000 1 00000000 4 00000000 0 00000000 0 00000000
 2 00000000 5 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 3 00000000 6 00000000 0 00000000 2 00000000 3 00000000 1 00000000 0 00000000
 4 00000000 7 00000000 0 00000000 3 00000000 3 00000000 1 50000000 1 00000000
 999999
 = 20PROJECT HEIGHTS FOR ATTRIBUTE # 5(SAME ORDER AS NAMES):
 0 06382979 0 02836879 0 34042552 0 08510638 0 05673759 0 17021276 0 25531915
 = 21PROJECT MATRIX FOR ATTRIBUTE # 6:
 1 00000000 7 00000000 2 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 3 00000000 4 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 4 00000000 4 00000000 1 00000000 1 00000000 0 00000000 0 00000000
 5 00000000 6 00000000 5 00000000 2 00000000 4 00000000 1 00000000 0 00000000
 7 00000000 7 00000000 6 00000000 3 00000000 5 00000000 1 00000000 1 00000000
 999999
 = 22PROJECT HEIGHTS FOR ATTRIBUTE # 6(SAME ORDER AS NAMES):
 0 05133471 0 02874743 0 05749487 0 14373717 0 07186858 0 28747433 0 33934290
 = 23PROJECT MATRIX FOR ATTRIBUTE # 7:
 1 00000000 3 00000000 0 00000000 0 00000000 0 00000000 0 00000000 4 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 2 00000000
 7 00000000 8 50000000 1 00000000 5 00000000 3 00000000 4 00000000 7 00000000
 1 50000000 4 00000000 0 00000000 1 00000000 1 00000000 0 00000000 4 00000000
 2 00000000 4 00000000 0 00000000 1 00000000 1 00000000 0 00000000 4 00000000
 3 00000000 5 00000000 0 00000000 1 50000000 2 00000000 1 00000000 4 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000
 999999

* 24PROJECT WEIGHTS FOR ATTRIBUTE # 7(SAME ORDER AS NAMES)
 0 07347170 0 02641509 0 52830189 0 10366038 0 10366038 0 13207547 0 02641509
 * 25FINAL PROJECT WEIGHTS (SAME ORDER AS NAMES)
 0 07388934 0 02946383 0 23687953 0 11180048 0 06880711 0 22181129 0 25334838
 999999

=001NAME

=002ORGANIZATION

=003PURPOSE

EIGHT MISSING ATTRIBUTE VALUES. REP 2

=004MODEL TYPE (1-5)

2

=005NUMBER OF PROJECTS(1-200)

7

=006NUMBER OF ATTRIBUTES(1- 20)

7

=007NUMBER AND NAME OF ATTRIBUTES

1 ACADEMIC FIELD

2 COMMUNICATIONS

3 HUMAN RELATIONS

4 ORGAN & MANAGEMENT

5 ACTIVITY LEVEL

6 EXP & PLACEMENT

7 RESUME PRESENTATION

999999

=008ATTRIBUTE MATRIX (N X N WHERE N IS # OF ATTRIBUTES):

1	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
2	0.0000000	1.0000000	0.0000000	1.0000000	0.0000000	0.0000000	0.0000000
3	0.0000000	0.0000000	1.0000000	0.0000000	0.0000000	0.0000000	0.0000000
4	0.0000000	0.0000000	0.0000000	1.0000000	0.0000000	0.0000000	0.0000000
5	0.0000000	0.0000000	0.0000000	0.0000000	1.0000000	0.0000000	0.0000000
6	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	1.0000000	0.0000000
7	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	1.0000000

999999

=009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES):

0 0.4113226 0.09239239 0.12345679 0.09239239 0.07407407 0.37037036 0.20576133

=010NUMBER AND NAME OF PROJECTS:

1 APP1

2 APP2

3 APP3

4 APP4

5 APP5

6 APP6

7 APP7

999999

= 11PROJECT MATRIX FOR ATTRIBUTE # 1:

1	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
2	0.0000000	1.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
3	0.0000000	0.0000000	1.0000000	0.0000000	0.0000000	0.0000000	0.0000000
4	0.0000000	0.0000000	0.0000000	1.0000000	0.0000000	0.0000000	0.0000000
5	0.0000000	0.0000000	0.0000000	0.0000000	1.0000000	0.0000000	0.0000000
6	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	1.0000000	0.0000000
7	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	1.0000000

999999

= 12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES):

0 0.04086266 0.07943517 0.20431328 0.07943517 0.05107832 0.47673097 0.06810443

= 13PROJECT MATRIX FOR ATTRIBUTE # 2:

1	0.0000000	7.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
2	0.0000000	1.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

6 00000000 9 00000000 1 00000000 5 00000000 3 00000000 4 00000000 4 00000000
 0 00000000 6 00000000 0 00000000 1 00000000 2 00000000 0 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 6 00000000 0 00000000 2 00000000 3 00000000 1 00000000 0 00000000
 2 00000000 7 00000000 0 00000000 3 00000000 4 00000000 2 00000000 1 00000000
 999999
 = 14PROJECT WEIGHTS FOR ATTRIBUTE # 2(SAME ORDER AS NAMES):
 0 08163265 0 02040816 0 48979592 0 08163265 0 04081633 0 12244898 0 16326530
 = 15PROJECT MATRIX FOR ATTRIBUTE # 3
 1 00000000 5 00000000 0 00000000 1 00000000 2 00000000 0 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 3 00000000 8 00000000 1 00000000 5 00000000 6 00000000 3 00000000 2 00000000
 0 00000000 6 00000000 0 00000000 1 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 5 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 2 00000000 6 00000000 0 00000000 3 00000000 2 00000000 1 00000000 0 00000000
 3 00000000 7 00000000 0 00000000 4 00000000 3 00000000 0 00000000 1 00000000
 999999
 = 16PROJECT WEIGHTS FOR ATTRIBUTE # 3(SAME ORDER AS NAMES):
 0 12345679 0 02645503 0 37037036 0 07407407 0 06172840 0 15873016 0 18518518
 = 17PROJECT MATRIX FOR ATTRIBUTE # 4
 1 00000000 7 00000000 0 00000000 4 00000000 1 00000000 2 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 5 00000000 5 00000000 1 00000000 2 00000000 3 00000000 1 00000000 0 00000000
 0 00000000 4 00000000 0 00000000 1 00000000 1 00000000 2 00000000 0 00000000
 0 00000000 4 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 5 00000000 0 00000000 0 00000000 0 00000000 2 00000000 1 00000000
 2 00000000 5 00000000 0 00000000 0 00000000 3 00000000 2 00000000 1 00000000
 999999
 = 18PROJECT WEIGHTS FOR ATTRIBUTE # 4(SAME ORDER AS NAMES):
 0 13043478 0 02608696 0 26086956 0 10434783 0 08695652 0 13043478 0 26086956
 = 19PROJECT MATRIX FOR ATTRIBUTE # 5
 1 00000000 7 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 5 00000000 9 00000000 1 00000000 4 00000000 6 00000000 2 00000000 1 00000000
 2 00000000 6 00000000 0 00000000 1 00000000 4 00000000 0 00000000 0 00000000
 2 00000000 5 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 3 00000000 6 00000000 0 00000000 2 00000000 3 00000000 1 00000000 0 00000000
 4 00000000 7 00000000 0 00000000 3 00000000 3 00000000 1 50000000 1 00000000
 999999
 = 20PROJECT WEIGHTS FOR ATTRIBUTE # 5(SAME ORDER AS NAMES):
 0 06382979 0 02836879 0 34042552 0 08510638 0 05673759 0 17021276 0 25931915
 = 21PROJECT MATRIX FOR ATTRIBUTE # 6
 1 00000000 7 00000000 2 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 4 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 3 00000000 5 00000000 4 00000000 1 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 4 00000000 4 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 5 00000000 6 00000000 5 00000000 2 00000000 4 00000000 1 00000000 0 00000000
 7 00000000 7 00000000 6 00000000 3 00000000 5 00000000 1 00000000 1 00000000
 999999
 = 22PROJECT WEIGHTS FOR ATTRIBUTE # 6(SAME ORDER AS NAMES):
 0 05133471 0 02874743 0 05749487 0 14373717 0 07186858 0 28747433 0 35934290
 = 23PROJECT MATRIX FOR ATTRIBUTE # 7
 1 00000000 3 00000000 0 00000000 0 00000000 0 00000000 0 00000000 4 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 2 00000000
 7 00000000 8 00000000 1 00000000 5 00000000 3 00000000 4 00000000 7 00000000
 1 50000000 4 00000000 1 00000000 1 00000000 0 00000000 0 00000000 4 00000000
 2 00000000 4 00000000 0 00000000 0 00000000 1 00000000 0 00000000 4 00000000
 3 00000000 5 00000000 0 00000000 1 50000000 2 00000000 1 00000000 4 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000
 999999

* 24PROJECT WEIGHTS FOR ATTRIBUTE # 7(SAME ORDER AS NAMES):
 0 07547170 0 02641509 0 52830189 0 10566038 0 10566038 0 13207547 0 02641509
 * 25FINAL PROJECT WEIGHTS (SAME ORDER AS NAMES)
 0 07582919 0 02902471 0 27885393 0 11091612 0 07411520 0 20888640 0 22237445
 99:999

-001NAME
COLBURN
-002ORGANIZATION.
DLXB
-003PURPOSE:
8 MISSING ATTRIBUTE VALUES. REP 3

-004MODEL TYPE (1-5).
2
-005NUMBER OF PROJECTS(1-200).
7
-006NUMBER OF ATTRIBUTES(1- 20).
7
-007NUMBER AND NAME OF ATTRIBUTES
1 ACEDENIC FIELD
2 COMMUNICATIONS
3 HUMAN RELATIONS
4 ORGAN & MANAGEMENT
5 ACTIVITY LEVEL
6 EXP & PLACEMENT
7 RESUME PRESENTATION

999999
-008ATTRIBUTE MATRIX (N X N WHERE N IS # OF ATTRIBUTES):
1. 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
2. 0.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
3. 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000
4. 0.0000000 0.0000000 0.0000000 1.0000000 1.0000000 1.0000000 1.0000000
5. 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000 1.0000000 1.0000000
6. 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000 1.0000000
7. 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000
8. 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000

999999
-009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES):
0.03649635 0.10948905 0.10948905 0.16423358 0.08759125 0.43795621 0.05474453

-010NUMBER AND NAME OF PROJECTS:
1 APP1
2 APP2
3 APP3
4 APP4
5 APP5
6 APP6
7 APP7

999999
- 11PROJECT MATRIX FOR ATTRIBUTE # 1:
1. 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
2. 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
3. 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000
4. 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000
5. 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000
6. 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000
7. 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000
8. 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000

999999
- 12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES):
0.04086266 0.07949517 0.20431328 0.07949517 0.05107832 0.47673097 0.06810443

- 13PROJECT MATRIX FOR ATTRIBUTE # 2:
1. 0.0000000 7.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
2. 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000

4	0.00000000	9	0.00000000	1	0.00000000	5	0.00000000	5	0.00000000	4	0.00000000	4	0.00000000
0	0.00000000	6	0.00000000	0	0.00000000	0	0.00000000	1	0.00000000	2	0.00000000	0	0.00000000
0	0.00000000	5	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	6	0.00000000	0	0.00000000	2	0.00000000	3	0.00000000	1	0.00000000	0	0.00000000
2	0.00000000	7	0.00000000	0	0.00000000	3	0.00000000	4	0.00000000	2	0.00000000	1	0.00000000

999999

- 14PROJECT WEIGHTS FOR ATTRIBUTE # 2(SAME ORDER AS NAMES):
 0.08163265 0.02040816 0.48979592 0.08163265 0.04081633 0.12244898 0.16326530

- 15PROJECT MATRIX FOR ATTRIBUTE # 3:

1	0.00000000	3	0.00000000	0	0.00000000	1	0.00000000	2	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000
3	0.00000000	8	0.00000000	1	0.00000000	5	0.00000000	4	0.00000000	3	0.00000000	2	0.00000000
0	0.00000000	6	0.00000000	0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	5	0.00000000	0	0.00000000	0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000
2	0.00000000	6	0.00000000	0	0.00000000	3	0.00000000	3	0.00000000	1	0.00000000	2	0.00000000
3	0.00000000	7	0.00000000	0	0.00000000	4	0.00000000	3	0.00000000	0	0.00000000	1	0.00000000

999999

- 16PROJECT WEIGHTS FOR ATTRIBUTE # 3(SAME ORDER AS NAMES):

0.12345679 0.02645503 0.37037036 0.07407407 0.06172840 0.15873016 0.18518518

- 17PROJECT MATRIX FOR ATTRIBUTE # 4:

1	0.00000000	7	0.00000000	0	0.00000000	4	0.00000000	1	0.00000000	2	0.00000000	0	0.00000000
0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000
5	0.00000000	5	0.00000000	1	0.00000000	2	0.00000000	3	0.00000000	1	0.00000000	1	0.00000000
0	0.00000000	4	0.00000000	0	0.00000000	1	0.00000000	1	0.00000000	2	0.00000000	2	0.00000000
0	0.00000000	4	0.00000000	0	0.00000000	0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	5	0.00000000	0	0.00000000	0	0.00000000	2	0.00000000	1	0.00000000	0	0.00000000
2	0.00000000	5	0.00000000	0	0.00000000	0	0.00000000	3	0.00000000	2	0.00000000	1	0.00000000

999999

- 18PROJECT WEIGHTS FOR ATTRIBUTE # 4(SAME ORDER AS NAMES):

0.13043478 0.02608696 0.26086956 0.10434783 0.08695652 0.13043478 0.26086956

- 19PROJECT MATRIX FOR ATTRIBUTE # 5:

1	0.00000000	7	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000
5	0.00000000	9	0.00000000	1	0.00000000	4	0.00000000	4	0.00000000	2	0.00000000	1	0.00000000
2	0.00000000	6	0.00000000	0	0.00000000	1	0.00000000	4	0.00000000	0	0.00000000	0	0.00000000
2	0.00000000	5	0.00000000	0	0.00000000	0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000
3	0.00000000	6	0.00000000	0	0.00000000	2	0.00000000	3	0.00000000	1	0.00000000	0	0.00000000
4	0.00000000	7	0.00000000	0	0.00000000	3	0.00000000	3	0.00000000	1	0.00000000	1	0.00000000

999999

- 20PROJECT WEIGHTS FOR ATTRIBUTE # 5(SAME ORDER AS NAMES):

0.06382979 0.02836879 0.34042552 0.08510638 0.05673759 0.17021276 0.25531915

- 21PROJECT MATRIX FOR ATTRIBUTE # 6:

1	0.00000000	7	0.00000000	2	0.00000000	0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	4	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000
3	0.00000000	5	0.00000000	4	0.00000000	1	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	4	0.00000000	0	0.00000000	0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000
5	0.00000000	6	0.00000000	5	0.00000000	2	0.00000000	2	0.00000000	1	0.00000000	1	0.00000000
7	0.00000000	7	0.00000000	6	0.00000000	3	0.00000000	5	0.00000000	1	0.00000000	1	0.00000000

999999

- 22PROJECT WEIGHTS FOR ATTRIBUTE # 6(SAME ORDER AS NAMES):

0.05133471 0.02874743 0.05749487 0.14373717 0.07184858 0.28747433 0.35934290

- 23PROJECT MATRIX FOR ATTRIBUTE # 7:

1	0.00000000	3	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	4	0.00000000
0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	2	0.00000000
7	0.00000000	8	5.00000000	1	0.00000000	5	0.00000000	5	0.00000000	4	0.00000000	7	0.00000000
1	5.00000000	4	0.00000000	0	0.00000000	1	0.00000000	1	0.00000000	0	0.00000000	4	0.00000000
2	0.00000000	4	0.00000000	0	0.00000000	0	0.00000000	1	0.00000000	0	0.00000000	4	0.00000000
3	0.00000000	5	0.00000000	0	0.00000000	1	5.00000000	2	0.00000000	1	0.00000000	4	0.00000000
0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	1	0.00000000

999999

- 24PROJECT WEIGHTS FOR ATTRIBUTE # 7(SAME ORDER AS NAMES)
 O 07547170 O 02641509 O 52830189 O 10366038 O 13207547 O 02641509
 - 25FINAL PROJECT WEIGHTS (SAME ORDER AS NAMES)
 O 07757311 O 02883624 O 22839920 O 11327492 O 06960222 O 21764751 O 26466686
 999999

-001NAME
COLBURI
-002ORGANIZATION

-003PURPOSE
EIGHT MISSING PROJECT VALUES. REP 1

-004MODEL TYPE (1-5)

-005NUMBER OF PROJECTS(1-200)

-006NUMBER OF ATTRIBUTES(1- 20)

-007NUMBER AND NAME OF ATTRIBUTES

- 1 ACADEMIC FIELD
- 2 COMMUNICATIONS
- 3 HUMAN RELATIONS
- 4 ORGAN & MANAGEMENT
- 5 ACTIVITY LEVEL
- 6 EXP & PLACEMENT
- 7 RESUME PRESENTATION

999999

-008ATTRIBUTE MATRIX (N X N WHERE N IS # OF ATTRIBUTES):

1.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2.00000000	1.00000000	1.00000000	1.00000000	1.00000000	0.00000000	0.00000000	1.00000000
3.00000000	0.00000000	1.00000000	0.00000000	0.00000000	0.00000000	0.00000000	2.00000000
4.50000000	0.00000000	2.00000000	1.00000000	0.00000000	0.00000000	0.00000000	3.00000000
5.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	3.00000000
6.00000000	4.00000000	3.00000000	4.00000000	4.00000000	5.00000000	1.00000000	5.00000000
7.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	1.00000000

999999

-009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES):

0.04282655 0.09635974 0.12847966 0.19271947 0.07708780 0.38343895 0.07708780

-010NUMBER AND NAME OF PROJECTS:

- 1 APP 1
- 2 APP 2
- 3 APP 3
- 4 APP 4
- 5 APP 5
- 6 APP 6
- 7 APP 7

999999

- 11PROJECT MATRIX FOR ATTRIBUTE # 1:

1.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
3.00000000	1.00000000	0.00000000	0.00000000	1.00000000	0.00000000	0.00000000	0.00000000
5.00000000	5.00000000	0.00000000	1.00000000	0.00000000	4.00000000	0.00000000	0.00000000
0.00000000	0.00000000	0.00000000	0.00000000	1.00000000	2.00000000	0.00000000	2.00000000
1.00000000	0.00000000	0.00000000	0.00000000	0.00000000	1.00000000	0.00000000	0.00000000
8.00000000	6.00000000	0.00000000	6.00000000	6.00000000	1.00000000	1.00000000	7.00000000
0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	2.00000000	0.00000000	1.00000000

999999

- 12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES):

0.05316456 0.07088508 0.26582277 0.07088508 0.05316456 0.42531645 0.06075949

- 13PROJECT MATRIX FOR ATTRIBUTE # 2:

1.00000000	7.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
0.00000000	1.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000

4 00000000 9 00000000 1 00000000 0 00000000 3 00000000 4 00000000 4 00000000
 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 2 00000000 7 00000000 0 00000000 0 00000000 4 00000000 2 00000000 1 00000000

999999

- 14PROJECT WEIGHTS FOR ATTRIBUTE # 2(SAME ORDER AS NAMES):

0 08032128 0 0208032 0 48192769 0 6024096 0 09638554 0 12048192 0 14056224

- 15PROJECT MATRIX FOR ATTRIBUTE # 3

1 00000000 5 00000000 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 3 00000000 0 00000000 1 00000000 0 00000000 0 00000000 6 00000000 3 00000000
 0 00000000 0 00000000 0 00000000 1 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 5 00000000 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 3 00000000 2 00000000 0 00000000 2 00000000
 3 00000000 7 00000000 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000

999999

- 16PROJECT WEIGHTS FOR ATTRIBUTE # 3(SAME ORDER AS NAMES):

0 08152174 0 01630435 0 48913044 0 03434782 0 08152174 0 16304348 0 11413044

- 17PROJECT MATRIX FOR ATTRIBUTE # 4

1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 2 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 5 00000000 1 00000000 0 00000000 3 00000000 1 00000000 0 00000000
 0 00000000 4 00000000 0 00000000 1 00000000 1 00000000 2 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 5 00000000 0 00000000 0 00000000 2 00000000 1 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 3 00000000 2 00000000 1 00000000

999999

- 18PROJECT WEIGHTS FOR ATTRIBUTE # 4(SAME ORDER AS NAMES):

0 22727272 0 03409091 0 17045455 0 22727272 0 05681818 0 11363636 0 17045455

- 19PROJECT MATRIX FOR ATTRIBUTE # 5

1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 9 00000000 1 00000000 0 00000000 6 00000000 2 00000000 0 00000000
 0 00000000 6 00000000 0 00000000 1 00000000 4 00000000 0 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 3 00000000 6 00000000 0 00000000 2 00000000 3 00000000 1 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 3 00000000 3 00000000 1 50000000 1 00000000

999999

- 20PROJECT WEIGHTS FOR ATTRIBUTE # 5(SAME ORDER AS NAMES):

0 06349207 0 03174603 0 28571430 0 09523810 0 04761905 0 19047619 0 28571430

- 21PROJECT MATRIX FOR ATTRIBUTE # 6

1 00000000 7 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 5 00000000 4 00000000 1 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 4 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 5 00000000 6 00000000 5 00000000 2 00000000 0 00000000 1 00000000 0 00000000
 7 00000000 7 00000000 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000

999999

- 22PROJECT WEIGHTS FOR ATTRIBUTE # 6(SAME ORDER AS NAMES):

0 04687500 0 03906250 0 03906250 0 15625000 0 15625000 0 23437500 0 32812497

- 23PROJECT MATRIX FOR ATTRIBUTE # 7

1 00000000 3 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 0 00000000 1 00000000 0 00000000 5 00000000 0 00000000 0 00000000
 1 50000000 4 00000000 0 00000000 1 00000000 1 00000000 0 00000000 0 00000000
 2 00000000 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 3 00000000 5 00000000 0 00000000 0 00000000 2 00000000 1 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000

999999

- 24-PROJECT WEIGHTS FOR ATTRIBUTE # 7(SAME ORDER AS NAMES)
 0 06400000 0 0240 0000 0 47999999 0 09599999 0 19199999 0 04800000
 - 25-FINAL PROJECT WEIGHTS (SAME ORDER AS NAMES)
 0 09218589 0 03298705 0 22759938 0 13459003 0 10428451 0 19249366 0 21583746
 999999

-001NAME
 CULBURN
 -002ORGANIZATION
 -003PURPOSE
 B MISSING PROJECT VALUES: REP 2

 -004MODEL TYPE (1-5)
 2
 -005NUMBER OF PROJECTS(1-200)
 7
 -006NUMBER OF ATTRIBUTES(1- 20)
 7
 -007NUMBER AND NAME OF ATTRIBUTES
 1 ACADEMIC FIELD
 2 COMMUNICATIONS
 3 HUMAN RELATIONS
 4 ORGAN & MANAGEMENT
 5 ACTIVITY LEVEL
 6 EXP & PLACEMENT
 7 RESUME PRESENTATION

999999
 -008ATTRIBUTE MATRIX (N X N WHERE N IS # OF ATTRIBUTES):
 1 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
 2 0.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
 3 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000
 4 5.0000000 0.0000000 2.0000000 1.0000000 1.0000000 1.0000000 1.0000000
 5 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
 6 0.0000000 4.0000000 3.0000000 3.0000000 4.0000000 1.0000000 1.0000000
 7 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000

999999
 -009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES):
 0 0.4282655 0.09635974 0.12847966 0.19271947 0.07708780 0.38543895 0.07708780
 -010NUMBER AND NAME OF PROJECTS
 1 APP1
 2 APP2
 3 APP3
 4 APP4
 5 APP5
 6 APP6
 7 APP7

999999
 - 11PROJECT MATRIX FOR ATTRIBUTE # 1:
 1 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
 3 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
 0 0.0000000 3.0000000 1.0000000 3.0000000 4.0000000 0.0000000 0.0000000
 0 0.0000000 0.0000000 0.0000000 1.0000000 2.0000000 0.0000000 0.0000000
 0 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000
 8 0.0000000 0.0000000 0.0000000 0.0000000 7.0000000 1.0000000 0.0000000
 0 0.0000000 2.0000000 0.0000000 0.0000000 2.0000000 0.0000000 0.0000000

999999
 - 12PROJECT WEIGHTS FOR ATTRIBUTE # 1 (SAME ORDER AS NAMES):
 0 0.4326923 0.05769231 0.28846194 0.09615385 0.07211538 0.34615386 0.09615385
 - 13PROJECT MATRIX FOR ATTRIBUTE # 2:
 1 0.0000000 7.0000000 0.0000000 0.0000000 3.0000000 2.0000000 0.0000000
 0 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000

999999
 - 14PROJECT WEIGHTS FOR ATTRIBUTE # 2(SAME ORDER AS NAMES):
 O 08722742 0 01869159 0 52336448 0 06342056 0 04361371 0 13084112 0 13084112
 - 15PROJECT MATRIX FOR ATTRIBUTE # 3:
 1 00000000 5 00000000 0 00000000 1 00000000 2 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 3 00000000 8 00000000 1 00000000 5 00000000 6 00000000 3 00000000
 0 00000000 6 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 5 00000000 0 00000000 0 00000000 1 00000000 0 00000000
 2 00000000 6 00000000 0 00000000 3 00000000 2 00000000 1 00000000
 3 00000000 7 00000000 0 00000000 4 00000000 3 00000000 0 00000000
 999999

- 16PROJECT WEIGHTS FOR ATTRIBUTE # 3(SAME ORDER AS NAMES):
 O 10714286 0 03571429 0 32142857 0 06428572 0 06428572 0 21428572 0 19285715
 - 17PROJECT MATRIX FOR ATTRIBUTE # 4:
 1 00000000 7 00000000 0 00000000 4 00000000 1 00000000 2 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 5 00000000 5 00000000 1 00000000 2 00000000 3 00000000 1 00000000
 0 00000000 4 00000000 0 00000000 1 00000000 1 00000000 2 00000000
 0 00000000 4 00000000 0 00000000 0 00000000 1 00000000 0 00000000
 0 00000000 5 00000000 0 00000000 0 00000000 2 00000000 1 00000000
 2 00000000 5 00000000 0 00000000 0 00000000 3 00000000 2 00000000
 3 00000000 7 00000000 0 00000000 0 00000000 4 00000000 3 00000000
 999999

- 18PROJECT WEIGHTS FOR ATTRIBUTE # 4(SAME ORDER AS NAMES):
 O 2737260 0 04109359 0 20547944 0 06849315 0 06849315 0 13698630 0 20547944
 - 19PROJECT MATRIX FOR ATTRIBUTE # 5:
 1 00000000 7 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 5 00000000 9 00000000 1 00000000 4 00000000 6 00000000 2 00000000
 2 00000000 6 00000000 0 00000000 1 00000000 4 00000000 0 00000000
 2 00000000 5 00000000 0 00000000 0 00000000 1 00000000 0 00000000
 3 00000000 6 00000000 0 00000000 2 00000000 3 00000000 1 00000000
 4 00000000 7 00000000 0 00000000 3 00000000 3 00000000 1 50000000
 999999

- 20PROJECT WEIGHTS FOR ATTRIBUTE # 5(SAME ORDER AS NAMES):
 O 05970149 0 01492537 0 35820895 0 08955224 0 05970149 0 17910448 0 23880596
 - 21PROJECT MATRIX FOR ATTRIBUTE # 6:
 1 00000000 7 00000000 2 00000000 0 00000000 1 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 4 00000000 1 00000000 0 00000000 0 00000000 0 00000000
 3 00000000 5 00000000 4 00000000 1 00000000 1 00000000 0 00000000
 0 00000000 4 00000000 4 00000000 0 00000000 1 00000000 0 00000000
 5 00000000 6 00000000 5 00000000 2 00000000 4 00000000 1 00000000
 7 00000000 7 00000000 6 00000000 3 00000000 5 00000000 1 00000000
 999999

- 22PROJECT WEIGHTS FOR ATTRIBUTE # 6(SAME ORDER AS NAMES):
 O 04938272 0 04938272 0 03703704 0 14814815 0 07407407 0 29629630 0 34567901
 - 23PROJECT MATRIX FOR ATTRIBUTE # 7:
 1 00000000 3 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 7 00000000 8 50000000 1 00000000 5 00000000 0 00000000 4 00000000
 1 50000000 4 00000000 0 00000000 1 00000000 1 00000000 0 00000000
 2 00000000 4 00000000 0 00000000 0 00000000 1 00000000 0 00000000
 3 00000000 5 00000000 0 00000000 1 50000000 2 00000000 1 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 999999

- 24PROJECT WEIGHTS FOR ATTRIBUTE # 7(SAME ORDER AS NAMES):
 O 04938272 0 04938272 0 03703704 0 14814815 0 07407407 0 29629630 0 34567901
 - 25PROJECT MATRIX FOR ATTRIBUTE # 8:
 1 00000000 3 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 7 00000000 8 50000000 1 00000000 5 00000000 0 00000000 4 00000000
 1 50000000 4 00000000 0 00000000 1 00000000 1 00000000 0 00000000
 2 00000000 4 00000000 0 00000000 0 00000000 1 00000000 0 00000000
 3 00000000 5 00000000 0 00000000 1 50000000 2 00000000 1 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 999999

* 24PROJECT WEIGHTS FOR ATTRIBUTE * 7(SAME ORDER AS NAMES)
 O 06299213 O 03149207 O 47244096 O 12598427 O 09448819 O 18897638 O 02362205
 * 25FINAL PROJECT WEIGHTS (SAME ORDER AS NAMES)
 O 10331601 O 03939297 O 22199050 O 10359852 O 06918761 O 22394235 O 23457202
 999999

-001NAME
COLBURN
-002ORGANIZATION
DLXB
-003PURPOSE
8 MISSING PROJECT VALUES. REP 3

-004MODEL TYPE (1-5)
2

-005NUMBER OF PROJECTS(1-200):
7

-006NUMBER OF ATTRIBUTES(1- 20):
7

-007NUMBER AND NAME OF ATTRIBUTES
1 ACADEMIC FIELD
2 COMMUNICATIONS
3 HUMAN RELATIONS
4 ORGAN & MANAGEMENT
5 ACTIVITY LEVEL
6 EXP & PLACEMENT
7 RESUME PRESENTATION

999999

-008ATTRIBUTE MATRIX (N X N WHERE N IS # OF ATTRIBUTES):

1. 00000000	0. 00000000	0. 00000000	0. 00000000	0. 00000000	0. 00000000	0. 00000000
2. 00000000	1. 00000000	1. 00000000	1. 00000000	0. 00000000	0. 00000000	1. 00000000
3. 00000000	0. 00000000	1. 00000000	0. 00000000	0. 00000000	0. 00000000	2. 00000000
4. 50000000	0. 00000000	2. 00000000	1. 00000000	0. 00000000	0. 00000000	3. 00000000
5. 00000000	0. 00000000	0. 00000000	0. 00000000	0. 00000000	1. 00000000	3. 00000000
6. 00000000	4. 00000000	3. 00000000	4. 00000000	0. 00000000	5. 00000000	5. 00000000
7. 00000000	0. 00000000	0. 00000000	0. 00000000	0. 00000000	0. 00000000	1. 00000000

999999

-009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES):

0. 04282655 0. 09635974 0. 12847966 0. 19271947 0. 07708780 0. 38543895 0. 07708780

-010NUMBER AND NAME OF PROJECTS:

1 APP1
2 APP2
3 APP3
4 APP4
5 APP5
6 APP6
7 APP7

999999

- 11PROJECT MATRIX FOR ATTRIBUTE # 1:

1. 00000000	0. 00000000	0. 00000000	0. 00000000	0. 00000000	0. 00000000	0. 00000000
3. 00000000	1. 00000000	0. 00000000	0. 00000000	0. 00000000	0. 00000000	0. 00000000
3. 00000000	0. 00000000	1. 00000000	0. 00000000	0. 00000000	0. 00000000	0. 00000000
3. 00000000	0. 00000000	0. 00000000	0. 00000000	0. 00000000	0. 00000000	2. 00000000
1. 00000000	0. 00000000	0. 00000000	0. 00000000	0. 00000000	0. 00000000	0. 00000000
8. 00000000	4. 00000000	0. 00000000	0. 00000000	7. 00000000	1. 00000000	0. 00000000
4. 00000000	0. 00000000	0. 00000000	0. 00000000	0. 00000000	0. 00000000	1. 00000000

999999

- 12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES):

0. 03562914 0. 07417218 0. 11125828 0. 16688742 0. 06357616 0. 44503310 0. 08344371

- 13PROJECT MATRIX FOR ATTRIBUTE # 2:

1. 00000000	7. 00000000	0. 00000000	3. 00000000	0. 00000000	2. 00000000	0. 00000000
0. 00000000	1. 00000000	0. 00000000	0. 00000000	0. 00000000	0. 00000000	0. 00000000

0 00000000 9 00000000 1 00000000 5 00000000 0 00000000 4 00000000 0 00000000
 0 00000000 6 00000000 0 00000000 1 00000000 2 00000000 0 00000000 0 00000000
 0 00000000 5 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 6 00000000 0 00000000 2 00000000 0 00000000 1 00000000 0 00000000
 2 00000000 7 00000000 0 00000000 3 00000000 0 00000000 0 00000000 1 00000000
 999999

- 14PROJECT WEIGHTS FOR ATTRIBUTE # 2(SAME ORDER AS NAMES):
 0 18372704 0 02624672 0 36745408 0 07349081 0 03674541 0 09186352 0 22047244
 - 15PROJECT MATRIX FOR ATTRIBUTE # 3:

1 00000000 5 00000000 0 00000000 0 00000000 2 00000000 0 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 3 00000000 0 00000000 1 00000000 5 00000000 6 00000000 3 00000000 2 00000000
 0 00000000 6 00000000 0 00000000 1 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 3 00000000 2 00000000 1 00000000 2 00000000
 3 00000000 0 00000000 0 00000000 0 00000000 3 00000000 0 00000000 1 00000000
 999999

- 16PROJECT WEIGHTS FOR ATTRIBUTE # 3(SAME ORDER AS NAMES):
 0 12987013 0 01298701 0 38961041 0 07792208 0 06493507 0 12987013 0 19480520
 - 17PROJECT MATRIX FOR ATTRIBUTE # 4:

1 00000000 7 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 3 00000000 5 00000000 1 00000000 2 00000000 3 00000000 0 00000000 0 00000000
 0 00000000 4 00000000 0 00000000 1 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 4 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 5 00000000 0 00000000 0 00000000 0 00000000 2 00000000 1 00000000
 0 00000000 5 00000000 0 00000000 0 00000000 0 00000000 3 00000000 2 00000000
 999999

- 18PROJECT WEIGHTS FOR ATTRIBUTE # 4(SAME ORDER AS NAMES):
 0 05286344 0 03303965 0 26431718 0 13215859 0 08810573 0 16519824 0 26431718
 - 19PROJECT MATRIX FOR ATTRIBUTE # 5:

1 00000000 7 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 5 00000000 9 00000000 1 00000000 4 00000000 6 00000000 0 00000000 0 00000000
 0 00000000 6 00000000 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 5 00000000 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000
 3 00000000 6 00000000 0 00000000 2 00000000 0 00000000 0 00000000 1 00000000
 0 00000000 7 00000000 0 00000000 3 00000000 0 00000000 0 00000000 1 00000000
 999999

- 20PROJECT WEIGHTS FOR ATTRIBUTE # 5(SAME ORDER AS NAMES):
 0 07185629 0 02994012 0 35928145 0 08982036 0 05988024 0 17964073 0 20958084
 - 21PROJECT MATRIX FOR ATTRIBUTE # 6:

1 00000000 7 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 4 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 5 00000000 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 4 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 5 00000000 6 00000000 0 00000000 2 00000000 0 00000000 1 00000000 0 00000000
 0 00000000 7 00000000 0 00000000 3 00000000 0 00000000 0 00000000 1 00000000
 999999

- 22PROJECT WEIGHTS FOR ATTRIBUTE # 6(SAME ORDER AS NAMES):
 0 04907976 0 03067485 0 06134970 0 12269939 0 12269939 0 24539879 0 36809817
 - 23PROJECT MATRIX FOR ATTRIBUTE # 7:

1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 4 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 2 00000000
 7 00000000 8 00000000 1 00000000 0 00000000 5 00000000 4 00000000 7 00000000
 0 00000000 4 00000000 0 00000000 1 00000000 0 00000000 0 00000000 4 00000000
 2 00000000 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000 4 00000000
 0 00000000 0 00000000 0 00000000 1 50000000 0 00000000 1 00000000 4 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000
 999999

= 24PROJECT WEIGHTS FOR ATTRIBUTE # 7(SAME ORDER AS NAMES)
 0 07061633 0 05815463 0 49431431 0 12357858 0 09886286 0 12357858 0 03089464
 = 25FINAL PROJECT WEIGHTS (SAME ORDER AS NAMES)
 0 07685993 0 03235593 0 23061706 0 11345329 0 091111633 0 19439454 0 26120293
 999999

```

-001NAME
-002ORGANIZATION
-003PURPOSE
TEN MISSING ATTRIBUTE VALUES. REP 1

-004MODEL TYPE (1-5)
2
-005NUMBER OF PROJECTS(1-200)
7
-006NUMBER OF ATTRIBUTES(1- 20)
7
-007NUMBER AND NAME OF ATTRIBUTES
1 ACADEMIC FIELD
2 COMMUNICATIONS
3 HUMAN RELATIONS
4 ORGAN & MANAGEMENT
5 ACTIVITY LEVEL
6 EXP & PLACEMENT
7 RESUME PRESENTATION

999999
-008ATTRIBUTE MATRIX (N X N WHERE N IS # OF ATTRIBUTES):
1 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
2 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
3 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000
4 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000
5 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000
6 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000
7 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000

999999
-009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES):
0 0.4301075 0.09677420 0.12903227 0.09677420 0.03225807 0.38709679 0.21505378
-010NUMBER AND NAME OF PROJECTS:
1 APP1
2 APP2
3 APP3
4 APP4
5 APP5
6 APP6
7 APP7

999999
- 11PROJECT MATRIX FOR ATTRIBUTE # 1:
1 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
2 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
3 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000
4 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000
5 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000
6 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000
7 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000

999999
- 12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES):
0 0.4086266 0.07945517 0.20431326 0.07945517 0.05107832 0.47673097 0.06810443
- 13PROJECT MATRIX FOR ATTRIBUTE # 2:
1 0.0000000 7.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
0 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000

```

6	0.00000000	9	0.00000000	1	0.00000000	5	0.00000000	5	0.00000000	4	0.00000000	4	0.00000000
0	0.00000000	6	0.00000000	0	0.00000000	1	0.00000000	2	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	5	0.00000000	0	0.00000000	0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	6	0.00000000	0	0.00000000	2	0.00000000	3	0.00000000	1	0.00000000	0	0.00000000
2	0.00000000	7	0.00000000	0	0.00000000	3	0.00000000	4	0.00000000	2	0.00000000	1	0.00000000

999999

= 14PROJECT WEIGHTS FOR ATTRIBUTE # 2 (SAME ORDER AS NAMES):
 0.08163265 0.02040816 0.48979592 0.08163265 0.04081633 0.12244898 0.16326530

= 15PROJECT MATRIX FOR ATTRIBUTE # 3:

1	0.00000000	5	0.00000000	0	0.00000000	1	0.00000000	2	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000
3	0.00000000	8	0.00000000	1	0.00000000	5	0.00000000	4	0.00000000	3	0.00000000	2	0.00000000
0	0.00000000	6	0.00000000	0	0.00000000	1	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	5	0.00000000	0	0.00000000	0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000
2	0.00000000	6	0.00000000	0	0.00000000	3	0.00000000	2	0.00000000	1	0.00000000	2	0.00000000
3	0.00000000	7	0.00000000	0	0.00000000	4	0.00000000	3	0.00000000	0	0.00000000	1	0.00000000

999999

= 16PROJECT WEIGHTS FOR ATTRIBUTE # 3 (SAME ORDER AS NAMES):

0.12345679 0.02645503 0.37037036 0.07407407 0.06172840 0.15873016 0.18518518

= 17PROJECT MATRIX FOR ATTRIBUTE # 4:

1	0.00000000	7	0.00000000	0	0.00000000	4	0.00000000	1	0.00000000	2	0.00000000	0	0.00000000
0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000
5	0.00000000	5	0.00000000	1	0.00000000	2	0.00000000	3	0.00000000	1	0.00000000	1	0.00000000
0	0.00000000	4	0.00000000	0	0.00000000	1	0.00000000	1	0.00000000	2	0.00000000	0	0.00000000
0	0.00000000	4	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	1	0.00000000	0	0.00000000
0	0.00000000	5	0.00000000	0	0.00000000	0	0.00000000	2	0.00000000	1	0.00000000	0	0.00000000
2	0.00000000	5	0.00000000	0	0.00000000	0	0.00000000	3	0.00000000	2	0.00000000	1	0.00000000

999999

= 18PROJECT WEIGHTS FOR ATTRIBUTE # 4 (SAME ORDER AS NAMES):

0.13043478 0.02608696 0.26086956 0.10434783 0.08695652 0.13043478 0.26086956

= 19PROJECT MATRIX FOR ATTRIBUTE # 5:

1	0.00000000	7	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000
5	0.00000000	9	0.00000000	1	0.00000000	4	0.00000000	6	0.00000000	2	0.00000000	1	0.00000000
2	0.00000000	6	0.00000000	0	0.00000000	1	0.00000000	4	0.00000000	0	0.00000000	0	0.00000000
2	0.00000000	5	0.00000000	0	0.00000000	0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000
3	0.00000000	6	0.00000000	0	0.00000000	2	0.00000000	3	0.00000000	1	0.00000000	0	0.00000000
4	0.00000000	7	0.00000000	0	0.00000000	3	0.00000000	3	0.00000000	1	0.00000000	1	0.00000000

999999

= 20PROJECT WEIGHTS FOR ATTRIBUTE # 5 (SAME ORDER AS NAMES):

0.06382979 0.02836879 0.34042552 0.08510638 0.03673759 0.17021276 0.25531915

= 21PROJECT MATRIX FOR ATTRIBUTE # 6:

1	0.00000000	7	0.00000000	2	0.00000000	0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	4	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000
3	0.00000000	5	0.00000000	4	0.00000000	1	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000
0	0.00000000	4	0.00000000	4	0.00000000	0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000
5	0.00000000	6	0.00000000	5	0.00000000	2	0.00000000	4	0.00000000	1	0.00000000	0	0.00000000
7	0.00000000	7	0.00000000	6	0.00000000	3	0.00000000	5	0.00000000	1	0.00000000	1	0.00000000

999999

= 22PROJECT WEIGHTS FOR ATTRIBUTE # 6 (SAME ORDER AS NAMES):

0.03133471 0.02874743 0.03749487 0.14373717 0.07186858 0.28747433 0.35934290

= 23PROJECT MATRIX FOR ATTRIBUTE # 7:

1	0.00000000	3	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	4	0.00000000
0	0.00000000	1	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	0	0.00000000	2	0.00000000
7	0.00000000	8	0.00000000	1	0.00000000	5	0.00000000	5	0.00000000	4	0.00000000	7	0.00000000
1	0.00000000	4	0.00000000	0	0.00000000	1	0.00000000	1	0.00000000	0	0.00000000	4	0.00000000
2	0.00000000	4	0.00000000	0	0.00000000	1	0.00000000	1	0.00000000	1	0.00000000	4	0.00000000
3	0.00000000	5	0.00000000	0	0.00000000	1	0.00000000	2	0.00000000	1	0.00000000	4	0.00000000
0	0.00000000	0	0.00000000	0	0.00000000	1	0.00000000	2	0.00000000	2	0.00000000	1	0.00000000

999999

* 24PROJECT WEIGHT FOR ATTRIBUTE # 7(SAME ORDER AS NAMES):
 O 07547170 O 02641509 O 52830189 O 10566038 O 13207347 O 02641509
 * 25FINAL PROJECT WEIGHTS (SAME ORDER AS NAMES)
 O 07637110 O 02905433 O 27607334 O 11208171 O 07489999 O 21063295 O 22088666
 999999

```

-001NAME
-002ORGANIZATION
-003PURPOSE
TEN MISSING ATTRIBUTE VALUES, REP 2

-004MODEL TYPE (1-5):
2
-005NUMBER OF PROJECTS(1-200):
7
-006NUMBER OF ATTRIBUTES(1- 20):
7
-007NUMBER AND NAME OF ATTRIBUTES
1 ACADEMIC FIELD
2 COMMUNICATIONS
3 HUMAN RELATIONS
4 ORGAN & MANAGEMENT
5 ACTIVITY LEVEL
6 EXP & PLACEMENT
7 RESUME PRESENTATION

999999
-008ATTRIBUTE MATRIX (N X N WHERE N IS # OF ATTRIBUTES):
1 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
2 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
3 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000
4 5.0000000 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000
5 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000
6 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000
7 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000

999999
-009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES):
0.03546099 0.07092199 0.12765957 0.19148935 0.19148935 0.31914893 0.06382977
-010NUMBER AND NAME OF PROJECTS:
1 APP1
2 APP2
3 APP3
4 APP4
5 APP5
6 APP6
7 APP7

999999
-11PROJECT MATRIX FOR ATTRIBUTE # 1:
1 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
3 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
5 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000
3 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
1 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
8 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
4 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000

999999
-12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES):
0.04086266 0.07943517 0.20431328 0.07943517 0.03107832 0.47673097 0.06810443
-13PROJECT MATRIX FOR ATTRIBUTE # 2:
1 0.0000000 7.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
0 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000

```

6	0.0000000	9	0.0000000	1	0.0000000	5	0.0000000	3	0.0000000	4	0.0000000	4	0.0000000
0	0.0000000	6	0.0000000	0	0.0000000	1	0.0000000	2	0.0000000	0	0.0000000	0	0.0000000
0	0.0000000	5	0.0000000	0	0.0000000	0	0.0000000	1	0.0000000	0	0.0000000	0	0.0000000
0	0.0000000	6	0.0000000	0	0.0000000	2	0.0000000	3	0.0000000	1	0.0000000	0	0.0000000
2	0.0000000	7	0.0000000	0	0.0000000	3	0.0000000	4	0.0000000	2	0.0000000	1	0.0000000

999999

= 14PROJECT WEIGHTS FOR ATTRIBUTE # 2(SAME ORDER AS NAMES):

0 08163263 0 02040816 0 48979592 0 08163265 0 04081633 0 12244898 0 16326530

= 15PROJECT MATRIX FOR ATTRIBUTE # 3:

1	0.0000000	5	0.0000000	0	0.0000000	1	0.0000000	2	0.0000000	0	0.0000000	0	0.0000000
0	0.0000000	1	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000
3	0.0000000	8	0.0000000	1	0.0000000	5	0.0000000	6	0.0000000	3	0.0000000	2	0.0000000
0	0.0000000	6	0.0000000	0	0.0000000	1	0.0000000	1	0.0000000	0	0.0000000	0	0.0000000
0	0.0000000	5	0.0000000	0	0.0000000	0	0.0000000	1	0.0000000	0	0.0000000	0	0.0000000
2	0.0000000	6	0.0000000	0	0.0000000	3	0.0000000	2	0.0000000	1	0.0000000	2	0.0000000
3	0.0000000	7	0.0000000	0	0.0000000	4	0.0000000	3	0.0000000	0	0.0000000	1	0.0000000

999999

= 16PROJECT WEIGHTS FOR ATTRIBUTE # 3(SAME ORDER AS NAMES):

0 12345679 0 02643503 0 37037036 0 07407407 0 06172840 0 15873016 0 18518518

= 17PROJECT MATRIX FOR ATTRIBUTE # 4:

1	0.0000000	7	0.0000000	0	0.0000000	4	0.0000000	1	0.0000000	2	0.0000000	0	0.0000000
0	0.0000000	1	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000
5	0.0000000	5	0.0000000	1	0.0000000	2	0.0000000	3	0.0000000	1	0.0000000	1	0.0000000
0	0.0000000	4	0.0000000	0	0.0000000	1	0.0000000	1	0.0000000	2	0.0000000	2	0.0000000
0	0.0000000	4	0.0000000	0	0.0000000	0	0.0000000	1	0.0000000	0	0.0000000	0	0.0000000
0	0.0000000	5	0.0000000	0	0.0000000	0	0.0000000	2	0.0000000	1	0.0000000	0	0.0000000
2	0.0000000	5	0.0000000	0	0.0000000	0	0.0000000	3	0.0000000	2	0.0000000	1	0.0000000

999999

= 18PROJECT WEIGHTS FOR ATTRIBUTE # 4(SAME ORDER AS NAMES):

0 13043478 0 02608696 0 26086956 0 10434783 0 08695652 0 13043478 0 26086956

= 19PROJECT MATRIX FOR ATTRIBUTE # 5:

1	0.0000000	7	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000
0	0.0000000	1	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000
5	0.0000000	9	0.0000000	1	0.0000000	4	0.0000000	6	0.0000000	2	0.0000000	1	0.0000000
2	0.0000000	6	0.0000000	0	0.0000000	1	0.0000000	4	0.0000000	0	0.0000000	0	0.0000000
2	0.0000000	5	0.0000000	0	0.0000000	0	0.0000000	1	0.0000000	1	0.0000000	0	0.0000000
3	0.0000000	6	0.0000000	0	0.0000000	2	0.0000000	3	0.0000000	1	0.0000000	0	0.0000000
4	0.0000000	7	0.0000000	0	0.0000000	3	0.0000000	3	0.0000000	1	0.0000000	1	0.0000000

999999

= 20PROJECT WEIGHTS FOR ATTRIBUTE # 5(SAME ORDER AS NAMES):

0 06382979 0 02836879 0 34042552 0 08510638 0 05673759 0 17021276 0 25531915

= 21PROJECT MATRIX FOR ATTRIBUTE # 6:

1	0.0000000	7	0.0000000	2	0.0000000	0	0.0000000	1	0.0000000	0	0.0000000	0	0.0000000
0	0.0000000	1	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000
0	0.0000000	4	0.0000000	1	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000
3	0.0000000	5	0.0000000	4	0.0000000	1	0.0000000	1	0.0000000	0	0.0000000	0	0.0000000
0	0.0000000	4	0.0000000	0	0.0000000	0	0.0000000	1	0.0000000	0	0.0000000	0	0.0000000
5	0.0000000	6	0.0000000	5	0.0000000	2	0.0000000	4	0.0000000	1	0.0000000	0	0.0000000
7	0.0000000	7	0.0000000	6	0.0000000	3	0.0000000	5	0.0000000	1	0.0000000	1	0.0000000

999999

= 22PROJECT WEIGHTS FOR ATTRIBUTE # 6(SAME ORDER AS NAMES):

0 03133471 0 02874743 0 03749487 0 14373717 0 07186898 0 28747433 0 35934290

= 23PROJECT MATRIX FOR ATTRIBUTE # 7:

1	0.0000000	3	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	4	0.0000000
0	0.0000000	1	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	2	0.0000000
7	0.0000000	8	0.0000000	1	0.0000000	5	0.0000000	5	0.0000000	4	0.0000000	7	0.0000000
1	0.0000000	4	0.0000000	0	0.0000000	1	0.0000000	1	0.0000000	0	0.0000000	4	0.0000000
2	0.0000000	4	0.0000000	0	0.0000000	0	0.0000000	1	0.0000000	0	0.0000000	4	0.0000000
3	0.0000000	5	0.0000000	0	0.0000000	1	0.0000000	2	0.0000000	1	0.0000000	4	0.0000000
0	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	1	0.0000000

999999

- 24PROJECT WEIGHTS FOR ATTRIBUTE * 7(SAME ORDER AS NAMES)
 O 07347170 O 02641309 O 52830189 O 10366038 O 10366038 O 13207547 O 02641309
 - 25FINAL PROJECT WEIGHTS (SAME ORDER AS NAMES)
 O 08139938 O 02893067 O 23647622 O 10693969 O 06978324 O 20360139 O 23284943
 999999

*001NAME

*002ORGANIZATION

*003PURPOSE

TEN MISSING ATTRIBUTE VALUES. REP 3

*004MODEL TYPE (1-5).

*005NUMBER OF PROJECTS(1-200):
7

*006NUMBER OF ATTRIBUTES(1- 20):
7

*007NUMBER AND NAME OF ATTRIBUTES
1 ACADEMIC FIELD
2 COMMUNICATIONS
3 HUMAN RELATIONS
4 ORGAN & MANAGEMENT
5 ACTIVITY LEVEL
6 EXP & PLACEMENT
7 RESUME PRESENTATION

999999

*008ATTRIBUTE MATRIX (N X N WHERE N IS # OF ATTRIBUTES):

1	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
0	0.0000000	1.0000000	0.0000000	1.0000000	0.0000000	0.0000000	1.0000000
0	0.0000000	0.0000000	1.0000000	0.0000000	0.0000000	0.0000000	2.0000000
0	0.0000000	0.0000000	0.0000000	2.0000000	1.0000000	0.0000000	3.0000000
0	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	1.0000000	3.0000000
0	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	3.0000000
3	0.0000000	0.0000000	0.0000000	0.0000000	4.0000000	0.0000000	5.0000000
5	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	1.0000000

999999

*009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES):

0.01374803 0.11811024 0.13748033 0.11811024 0.03937008 0.47244096 0.07874016

*010NUMBER AND NAME OF PROJECTS:

1 APP1
2 APP2
3 APP3
4 APP4
5 APP5
6 APP6
7 APP7

999999

*11PROJECT MATRIX FOR ATTRIBUTE # 1:

1	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
3	0.0000000	1.0000000	0.0000000	0.0000000	1.0000000	2.0000000	0.0000000
5	0.0000000	3.0000000	0.0000000	1.0000000	3.0000000	0.0000000	0.0000000
3	0.0000000	0.0000000	0.0000000	0.0000000	1.0000000	2.0000000	0.0000000
1	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	1.0000000	0.0000000
8	0.0000000	6.0000000	0.0000000	4.0000000	6.0000000	7.0000000	0.0000000
4	0.0000000	2.0000000	0.0000000	0.0000000	0.0000000	2.0000000	1.0000000

999999

*12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES):

0.0408266 0.07945517 0.20431328 0.07945517 0.05107832 0.47673097 0.06810443

*13PROJECT MATRIX FOR ATTRIBUTE # 2:

1	0.0000000	7.0000000	0.0000000	0.0000000	3.0000000	2.0000000	0.0000000
0	0.0000000	1.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

6	0.0000000	9	0.0000000	1	0.0000000	5	0.0000000	4	0.0000000	4	0.0000000
0	0.0000000	6	0.0000000	0	0.0000000	1	0.0000000	2	0.0000000	0	0.0000000
0	0.0000000	5	0.0000000	0	0.0000000	0	0.0000000	1	0.0000000	0	0.0000000
0	0.0000000	6	0.0000000	0	0.0000000	2	0.0000000	3	0.0000000	1	0.0000000
2	0.0000000	7	0.0000000	0	0.0000000	3	0.0000000	4	0.0000000	2	0.0000000

999999

= 14PROJECT WEIGHTS FOR ATTRIBUTE # 2(SAME ORDER AS NAMES)

0 0.0163265 0.02040816 0.4897952 0.08163265 0.04081633 0.12244898 0.16326530

= 15PROJECT MATRIX FOR ATTRIBUTE # 3:

1	0.0000000	5	0.0000000	0	0.0000000	1	0.0000000	2	0.0000000	0	0.0000000
0	0.0000000	1	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000
3	0.0000000	8	0.0000000	1	0.0000000	5	0.0000000	6	0.0000000	3	0.0000000
0	0.0000000	0	0.0000000	0	0.0000000	1	0.0000000	1	0.0000000	0	0.0000000
0	0.0000000	5	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000
2	0.0000000	6	0.0000000	0	0.0000000	3	0.0000000	2	0.0000000	2	0.0000000
3	0.0000000	7	0.0000000	0	0.0000000	4	0.0000000	3	0.0000000	1	0.0000000

999999

= 16PROJECT WEIGHTS FOR ATTRIBUTE # 3(SAME ORDER AS NAMES)

0 1.2345679 0.02645503 0.37037036 0.07407407 0.08172840 0.15873016 0.18518518

= 17PROJECT MATRIX FOR ATTRIBUTE # 4:

1	0.0000000	7	0.0000000	0	0.0000000	4	0.0000000	1	0.0000000	2	0.0000000
0	0.0000000	1	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000
5	0.0000000	5	0.0000000	1	0.0000000	2	0.0000000	3	0.0000000	1	0.0000000
0	0.0000000	4	0.0000000	0	0.0000000	1	0.0000000	1	0.0000000	2	0.0000000
0	0.0000000	4	0.0000000	0	0.0000000	0	0.0000000	1	0.0000000	0	0.0000000
0	0.0000000	5	0.0000000	0	0.0000000	0	0.0000000	2	0.0000000	0	0.0000000
2	0.0000000	6	0.0000000	0	0.0000000	3	0.0000000	3	0.0000000	2	0.0000000

999999

= 18PROJECT WEIGHTS FOR ATTRIBUTE # 4(SAME ORDER AS NAMES)

0 1.3043478 0.02608696 0.26086956 0.10434783 0.08695652 0.13043478 0.26086956

= 19PROJECT MATRIX FOR ATTRIBUTE # 5:

1	0.0000000	7	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000
0	0.0000000	1	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000
5	0.0000000	9	0.0000000	1	0.0000000	4	0.0000000	6	0.0000000	2	0.0000000
2	0.0000000	6	0.0000000	0	0.0000000	1	0.0000000	4	0.0000000	0	0.0000000
2	0.0000000	5	0.0000000	0	0.0000000	1	0.0000000	1	0.0000000	0	0.0000000
3	0.0000000	6	0.0000000	0	0.0000000	2	0.0000000	3	0.0000000	1	0.0000000
4	0.0000000	7	0.0000000	0	0.0000000	3	0.0000000	3	0.0000000	1	0.0000000

999999

= 20PROJECT WEIGHTS FOR ATTRIBUTE # 5(SAME ORDER AS NAMES)

0 0.6382979 0.02836879 0.3404252 0.08510638 0.05673759 0.17021276 0.25531913

= 21PROJECT MATRIX FOR ATTRIBUTE # 6:

1	0.0000000	7	0.0000000	2	0.0000000	0	0.0000000	1	0.0000000	0	0.0000000
0	0.0000000	1	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000
0	0.0000000	4	0.0000000	1	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000
3	0.0000000	5	0.0000000	4	0.0000000	1	0.0000000	1	0.0000000	0	0.0000000
0	0.0000000	4	0.0000000	0	0.0000000	1	0.0000000	0	0.0000000	0	0.0000000
5	0.0000000	6	0.0000000	5	0.0000000	2	0.0000000	4	0.0000000	1	0.0000000
7	0.0000000	7	0.0000000	6	0.0000000	3	0.0000000	5	0.0000000	1	0.0000000

999999

= 22PROJECT WEIGHTS FOR ATTRIBUTE # 6(SAME ORDER AS NAMES)

0 0.3133471 0.02874743 0.05749487 0.14373717 0.07186858 0.28747433 0.35934290

= 23PROJECT MATRIX FOR ATTRIBUTE # 7:

1	0.0000000	3	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000
0	0.0000000	1	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000	0	0.0000000
7	0.0000000	8	0.0000000	1	0.0000000	5	0.0000000	3	0.0000000	4	0.0000000
1	0.0000000	4	0.0000000	0	0.0000000	1	0.0000000	1	0.0000000	0	0.0000000
2	0.0000000	4	0.0000000	0	0.0000000	0	0.0000000	1	0.0000000	0	0.0000000
3	0.0000000	5	0.0000000	0	0.0000000	1	0.0000000	2	0.0000000	1	0.0000000
0	0.0000000	6	0.0000000	0	0.0000000	1	0.0000000	0	0.0000000	0	0.0000000

999999

* 24PROJECT WEIGHTS FOR ATTRIBUTE # 7(SAME ORDER AS NAMES)
O 07547170 O 02641509 O 52830189 O 10566038 O 10566038 O 13207547 O 02641509
- 25FINAL PROJECT WEIGHTS (SAME ORDER AS NAMES)
O 07784112 O 02768723 O 23236895 O 11446036 O 07012381 O 21528821 O 26223040
999999

```

*001NAME
COLBURN
*002ORGANIZATION
*003PURPOSE
10 MISSING PROJECT VALUES. REP 1

*004MODEL TYPE (1-5)
2
*005NUMBER OF PROJECTS(1-200)
7
*006NUMBER OF ATTRIBUTES(1- 20)
7
*007NUMBER AND NAME OF ATTRIBUTES
1 ACADEMIC FIELD
2 COMMUNICATIONS
3 HUMAN RELATIONS
4 ORGAN & MANAGEMENT
5 ACTIVITY LEVEL
6 EXP & PLACEMENT
7 RESUME PRESENTATION

999999
*008ATTRIBUTE MATRIX (N X N WHERE N IS # OF ATTRIBUTES):
1 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
2 0.0000000 1.0000000 1.0000000 1.0000000 1.0000000 0.0000000 0.0000000
3 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000
4 0.0000000 0.0000000 0.0000000 2.0000000 1.0000000 0.0000000 0.0000000
5 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
6 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000
7 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000

999999
*009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES):
0.04282653 0.09635974 0.12847966 0.19271947 0.07708780 0.38543895 0.07708780
*010NUMBER AND NAME OF PROJECTS:
1 APP 1
2 APP 2
3 APP 3
4 APP 4
5 APP 5
6 APP 6
7 APP 7

999999
*11PROJECT MATRIX FOR ATTRIBUTE # 1:
1 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
3 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
5 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
8 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000

999999
*12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES):
0.03440415 0.03440415 0.27202073 0.09067358 0.03108808 0.43523318 0.06217617
*13PROJECT MATRIX FOR ATTRIBUTE # 2:
1 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000

```

0 00000000 9 00000000 1 00000000 5 00000000 5 00000000 4 00000000 4 00000000
 0 00000000 6 00000000 0 00000000 1 00000000 2 00000000 0 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000
 0 00000000 6 00000000 0 00000000 0 00000000 3 00000000 1 00000000 0 00000000
 2 00000000 0 00000000 0 00000000 3 00000000 0 00000000 0 00000000 1 00000000

999999

= 14PROJECT WEIGHTS FOR ATTRIBUTE # 2(SAME ORDER AS NAMES):

0 06048387 0 02016129 0 48387098 0 09677420 0 09677420 0 12096775 0 12096775

= 15PROJECT MATRIX FOR ATTRIBUTE # 3:

1 00000000 0 00000000 0 00000000 0 00000000 2 00000000 0 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 0 00000000 1 00000000 5 00000000 6 00000000 3 00000000 2 00000000
 0 00000000 6 00000000 0 00000000 1 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 6 00000000 0 00000000 0 00000000 0 00000000 2 00000000 1 00000000
 3 00000000 0 00000000 0 00000000 0 00000000 3 00000000 0 00000000 1 00000000

999999

= 16PROJECT WEIGHTS FOR ATTRIBUTE # 3(SAME ORDER AS NAMES):

0 06880734 0 02593578 0 41284406 0 08256881 0 06880734 0 13761468 0 20642203

= 17PROJECT MATRIX FOR ATTRIBUTE # 4:

1 00000000 0 00000000 0 00000000 4 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 5 00000000 1 00000000 2 00000000 0 00000000 1 00000000 1 00000000
 0 00000000 0 00000000 0 00000000 1 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000
 0 00000000 5 00000000 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000
 2 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 2 00000000

999999

= 18PROJECT WEIGHTS FOR ATTRIBUTE # 4(SAME ORDER AS NAMES):

0 10638298 0 04253319 0 21276596 0 10638298 0 10638298 0 21276596 0 21276596

= 19PROJECT MATRIX FOR ATTRIBUTE # 5:

1 00000000 7 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 5 00000000 0 00000000 1 00000000 4 00000000 6 00000000 0 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 5 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 3 00000000 0 00000000 0 00000000 0 00000000 2 00000000 1 00000000 0 00000000
 4 00000000 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000 1 00000000

999999

= 20PROJECT WEIGHTS FOR ATTRIBUTE # 5(SAME ORDER AS NAMES):

0 06358819 0 00908403 0 31794095 0 07948524 0 03299016 0 19076458 0 28614685

= 21PROJECT MATRIX FOR ATTRIBUTE # 6:

1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 4 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 4 00000000 1 00000000 1 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 4 00000000 0 00000000 1 00000000 0 00000000
 5 00000000 0 00000000 0 00000000 5 00000000 2 00000000 0 00000000 1 00000000
 7 00000000 7 00000000 6 00000000 0 00000000 0 00000000 0 00000000 1 00000000

999999

= 22PROJECT WEIGHTS FOR ATTRIBUTE # 6(SAME ORDER AS NAMES):

0 03773585 0 03773585 0 04402516 0 17610063 0 17610063 0 26415095 0 26415095

= 23PROJECT MATRIX FOR ATTRIBUTE # 7:

1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 7 00000000 0 00000000 0 00000000 1 00000000 5 00000000 4 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000 1 00000000 0 00000000
 0 00000000 4 00000000 0 00000000 0 00000000 1 00000000 0 00000000 4 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 1 50000000 2 00000000 1 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000

999999

* 24PROJECT WEIGHTS FOR ATTRIBUTE # 7(SAME ORDER AS NAMES)
O 07547170 O 02641509 O 52830189 O 10366038 O 13207547 O 02641509
* 25FINAL PROJECT WEIGHTS (SAME ORDER AS NAMES)
O 06276526 O 03270170 O 23452962 O 12646738 O 12010501 O 21568190 O 20775318
999999

-001NAME
COLBURN
-002ORGANIZATION

-003PURPOSE:
10 MISSING PROJECT VALUES. REP 2

-004MODEL TYPE (1-5):

-005NUMBER OF PROJECTS(1-200):

-006NUMBER OF ATTRIBUTES(1- 20):

-007NUMBER AND NAME OF ATTRIBUTES

- 1 ACADEMIC FIELD
- 2 COMMUNICATIONS
- 3 HUMAN RELATIONS
- 4 ORGAN & MANAGEMENT
- 5 ACTIVITY LEVEL
- 6 EXP & PLACEMENT
- 7 RESUME PRESENTATION

999999

-008ATTRIBUTE MATRIX (N X N WHERE N IS # OF ATTRIBUTES):

1.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2.00000000	1.00000000	1.00000000	1.00000000	1.00000000	0.00000000	0.00000000
3.00000000	0.00000000	1.00000000	0.00000000	0.00000000	0.00000000	1.00000000
4.30000000	0.00000000	0.00000000	2.00000000	1.00000000	0.00000000	0.00000000
5.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
6.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
7.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000

999999

-009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES):

0.04282633 0.09633974 0.12847966 0.19271947 0.07708780 0.38543895 0.07708780

-010NUMBER AND NAME OF PROJECTS:

- 1 APP 1
- 2 APP 2
- 3 APP 3
- 4 APP 4
- 5 APP 5
- 6 APP 6
- 7 APP 7

999999

- 11PROJECT MATRIX FOR ATTRIBUTE # 1:

1.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
3.00000000	1.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
0.00000000	0.00000000	1.00000000	0.00000000	0.00000000	0.00000000	0.00000000
3.00000000	0.00000000	0.00000000	1.00000000	0.00000000	0.00000000	0.00000000
1.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
8.00000000	6.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
0.00000000	2.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000

999999

- 12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES):

0.05250000 0.07000000 0.18000001 0.15750000 0.06000000 0.42000002 0.06000000

- 13PROJECT MATRIX FOR ATTRIBUTE # 2:

1.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
0.00000000	1.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000

999999
 = 14PROJECT WEIGHTS FOR ATTRIBUTE # 2(SAME ORDER AS NAMES):
 O 0.08347009 0.00834701 0.51282054 0.03128206 0.04273504 0.12820514 0.17094018
 = 15PROJECT MATRIX FOR ATTRIBUTE # 3:
 1 0.00000000 5.00000000 0.00000000 1.00000000 0.00000000 0.00000000 0.00000000
 0 0.00000000 1.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
 0 0.00000000 8.00000000 0.00000000 1.00000000 0.00000000 0.00000000 0.00000000
 0 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
 0 0.00000000 5.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
 0 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
 0 0.00000000 7.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
 999999
 = 16PROJECT WEIGHTS FOR ATTRIBUTE # 3(SAME ORDER AS NAMES):
 O 0.15469615 0.03314918 0.29003927 0.03801105 0.07734808 0.15469615 0.23204421
 = 17PROJECT MATRIX FOR ATTRIBUTE # 4:
 1 0.00000000 0.00000000 0.00000000 0.00000000 4.00000000 1.00000000 0.00000000
 0 0.00000000 1.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
 0 0.00000000 5.00000000 0.00000000 1.00000000 0.00000000 0.00000000 0.00000000
 0 0.00000000 4.00000000 0.00000000 0.00000000 1.00000000 0.00000000 0.00000000
 0 0.00000000 4.00000000 0.00000000 0.00000000 0.00000000 1.00000000 0.00000000
 0 0.00000000 5.00000000 0.00000000 0.00000000 0.00000000 2.00000000 0.00000000
 2 0.00000000 5.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
 999999
 = 18PROJECT WEIGHTS FOR ATTRIBUTE # 4(SAME ORDER AS NAMES):
 O 0.11560693 0.04624277 0.23121387 0.02890173 0.11560693 0.23121387 0.23121387
 = 19PROJECT MATRIX FOR ATTRIBUTE # 5:
 1 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
 0 0.00000000 1.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
 5 0.00000000 9.00000000 1.00000000 0.00000000 0.00000000 0.00000000 0.00000000
 0 0.00000000 0.00000000 0.00000000 0.00000000 1.00000000 0.00000000 0.00000000
 2 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
 3 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
 4 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
 999999
 = 20PROJECT WEIGHTS FOR ATTRIBUTE # 5(SAME ORDER AS NAMES):
 O 0.05343148 0.03285421 0.29568788 0.19712527 0.04928132 0.14784394 0.22176592
 = 21PROJECT MATRIX FOR ATTRIBUTE # 6:
 1 0.00000000 7.00000000 2.00000000 0.00000000 0.00000000 0.00000000 0.00000000
 0 0.00000000 1.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
 0 0.00000000 4.00000000 1.00000000 0.00000000 0.00000000 0.00000000 0.00000000
 0 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
 0 0.00000000 4.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
 5 0.00000000 0.00000000 0.00000000 0.00000000 2.00000000 0.00000000 0.00000000
 7 0.00000000 7.00000000 6.00000000 0.00000000 0.00000000 0.00000000 0.00000000
 999999
 = 22PROJECT WEIGHTS FOR ATTRIBUTE # 6(SAME ORDER AS NAMES):
 O 0.06264407 0.02164502 0.04329004 0.17316017 0.08658008 0.34632033 0.25974026
 = 23PROJECT MATRIX FOR ATTRIBUTE # 7:
 1 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
 0 0.00000000 1.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
 7 0.00000000 0.00000000 0.00000000 1.00000000 0.00000000 0.00000000 0.00000000
 1 5.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
 3 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
 0 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 1.50000000 0.00000000
 0 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
 999999

- 24PROJECT WEIGHTS FOR ATTRIBUTE # 7(SAME ORDER AS NAMES):
 O 07648184 O 03333729 O 53337283 O 10707437 O 06692161 O 13384321 O 02676864
 - 25FINAL PROJECT WEIGHTS: (SAME ORDER AS NAMES)
 O 08930604 O 03199489 O 21969996 O 11490263 O 08123406 O 24997370 O 21268673
 999999

```
9999999
- 12PROJECT HEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES):
0 05286344 0 03286344 0 26431718 0 15897032 0 06607930 0 31718063 0 08810373
- 13PROJECT MATRIX FOR ATTRIBUTE # 2:
1 00000000 7 00000000 0 00000000 3 00000000 0 00000000 0 00000000 0 00000000
0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
```

6 00000000 9 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 4 00000000
 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 5 00000000 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 6 00000000 0 00000000 0 00000000 0 00000000 3 00000000 1 00000000 0 00000000
 0 00000000 7 00000000 0 00000000 0 00000000 4 00000000 4 00000000 2 00000000 1 00000000

999999

= 14PROJECT WEIGHTS FOR ATTRIBUTE # 2(SAME ORDER AS NAMES):

0 09504951 0 01782178 0 57029706 0 03168317 0 03564357 0 10693070 0 14257427

= 15PROJECT MATRIX FOR ATTRIBUTE # 3:

1 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 3 00000000 8 00000000 1 00000000 3 00000000 6 00000000 0 00000000 0 00000000 2 00000000
 0 00000000 0 00000000 0 00000000 1 00000000 1 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 3 00000000 2 00000000 1 00000000 0 00000000 2 00000000
 0 00000000 7 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000

999999

= 16PROJECT WEIGHTS FOR ATTRIBUTE # 3(SAME ORDER AS NAMES):

0 11396012 0 04273504 0 34188035 0 06837607 0 05698006 0 20512822 0 17094018

= 17PROJECT MATRIX FOR ATTRIBUTE # 4:

1 00000000 7 00000000 0 00000000 4 00000000 0 00000000 0 00000000 2 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 5 00000000 5 00000000 1 00000000 2 00000000 3 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000 2 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 5 00000000 0 00000000 0 00000000 0 00000000 2 00000000 1 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000

999999

= 18PROJECT WEIGHTS FOR ATTRIBUTE # 4(SAME ORDER AS NAMES):

0 07741936 0 01935484 0 38709679 0 19354840 0 12903227 0 09677420 0 09677420

= 19PROJECT MATRIX FOR ATTRIBUTE # 5:

1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 9 00000000 1 00000000 4 00000000 6 00000000 0 00000000 2 00000000 1 00000000
 2 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000
 3 00000000 6 00000000 0 00000000 0 00000000 0 00000000 3 00000000 1 00000000 0 00000000
 0 00000000 7 00000000 0 00000000 0 00000000 0 00000000 3 00000000 0 00000000 1 00000000

999999

= 20PROJECT WEIGHTS FOR ATTRIBUTE # 5(SAME ORDER AS NAMES):

0 05607476 0 03738318 0 33644858 0 08411215 0 05607476 0 16822429 0 26168224

= 21PROJECT MATRIX FOR ATTRIBUTE # 6:

1 00000000 7 00000000 2 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 4 00000000 4 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 6 00000000 5 00000000 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000
 7 00000000 7 00000000 6 00000000 0 00000000 0 00000000 5 00000000 0 00000000 1 00000000

999999

= 22PROJECT WEIGHTS FOR ATTRIBUTE # 6(SAME ORDER AS NAMES):

0 05327020 0 05179047 0 06214857 0 07457828 0 07457828 0 31074283 0 37289140

= 23PROJECT MATRIX FOR ATTRIBUTE # 7:

1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 7 00000000 8 50000000 1 00000000 1 00000000 0 00000000 0 00000000 0 00000000 7 00000000
 1 50000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 2 00000000 4 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000
 3 00000000 5 00000000 0 00000000 0 00000000 1 50000000 2 00000000 1 00000000 4 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000

999999

- 24PROJECT WEIGHTS FOR ATTRIBUTE # 7(SAME ORDER AS NAMES):
 0. 05415162 0. 04332130 0. 37906137 0. 14440434 0. 10830325 0. 21660650 0. 05415162
 - 25FINAL PROJECT WEIGHTS: (SAME ORDER AS NAMES)
 0. 07001420 0. 03938530 0. 26391080 0. 10229155 0. 07986928 0. 21833080 0. 22619811
 999999

```

-001NAME
COLBURN
-002ORGANIZATION
-003PURPOSE:
15 MISSING ATTRIBUTE VALUES, ONE REP ONLY

-004MODEL TYPE (1-5):
2
-005NUMBER OF PROJECTS(1-200):
7
-006NUMBER OF ATTRIBUTES(1- 20):
7
-007NUMBER AND NAME OF ATTRIBUTES
1 ACADEMIC FIELD
2 COMMUNICATIONS
3 HUMAN RELATIONS
4 ORGAN & MANAGEMENT
5 ACTIVITY LEVEL
6 EXP & PLACEMENT
7 RESUME PRESENTATION

999999
-008ATTRIBUTE MATRIX (N X N WHERE N IS # OF ATTRIBUTES):
1. 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
2. 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
3. 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000
4. 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000
5. 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000
6. 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000
7. 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000

999999
-009ATTRIBUTE WEIGHTS (SAME ORDER AS NAMES):
0.03636364 0.07272727 0.10909091 0.16363636 0.10909091 0.32727271 0.18181819
-010NUMBER AND NAME OF PROJECTS:
1 APP1
2 APP2
3 APP3
4 APP4
5 APP5
6 APP6
7 APP7

999999
- 11PROJECT MATRIX FOR ATTRIBUTE # 1:
1. 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
3. 0.0000000 1.0000000 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000
5. 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000
3. 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000
1. 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000
8. 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000
4. 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000

999999
- 12PROJECT WEIGHTS FOR ATTRIBUTE # 1(SAME ORDER AS NAMES):
0.04086266 0.07945517 0.20431328 0.07945517 0.05107832 0.47673097 0.06810443
- 13PROJECT MATRIX FOR ATTRIBUTE # 2:
1. 0.0000000 7.00000000 0.00000000 3.00000000 2.00000000 2.00000000 0.00000000
0.00000000 1.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000

```

6	00000000	9	00000000	1	00000000	5	00000000	5	00000000	4	00000000	4	00000000
0	00000000	4	00000000	0	00000000	1	00000000	2	00000000	0	00000000	0	00000000
0	00000000	5	00000000	0	00000000	0	00000000	1	00000000	0	00000000	0	00000000
0	00000000	6	00000000	0	00000000	2	00000000	3	00000000	1	00000000	0	00000000
2	00000000	7	00000000	0	00000000	3	00000000	4	00000000	2	00000000	1	00000000

999999

= 14PROJECT WEIGHTS FOR ATTRIBUTE # 2(SAME ORDER AS NAMES):

0 08163265 0 02040816 0 48979992 0 08163265 0 04081633 0 12244898 0 16326530

= 15PROJECT MATRIX FOR ATTRIBUTE # 3:

1	00000000	5	00000000	0	00000000	1	00000000	2	00000000	0	00000000	0	00000000
0	00000000	1	00000000	0	00000000	0	00000000	0	00000000	0	00000000	0	00000000
3	00000000	8	00000000	1	00000000	5	00000000	6	00000000	3	00000000	2	00000000
0	00000000	6	00000000	0	00000000	1	00000000	1	00000000	0	00000000	0	00000000
0	00000000	5	00000000	0	00000000	0	00000000	1	00000000	0	00000000	0	00000000
2	00000000	6	00000000	0	00000000	3	00000000	2	00000000	1	00000000	2	00000000
3	00000000	7	00000000	0	00000000	4	00000000	3	00000000	0	00000000	1	00000000

999999

= 16PROJECT WEIGHTS FOR ATTRIBUTE # 3(SAME ORDER AS NAMES):

0 12345679 0 02645503 0 37037036 0 07407407 0 06172840 0 15873016 0 18518518

= 17PROJECT MATRIX FOR ATTRIBUTE # 4:

1	00000000	7	00000000	0	00000000	4	00000000	1	00000000	2	00000000	0	00000000
0	00000000	1	00000000	0	00000000	0	00000000	0	00000000	0	00000000	0	00000000
5	00000000	5	00000000	1	00000000	2	00000000	3	00000000	1	00000000	1	00000000
0	00000000	4	00000000	0	00000000	1	00000000	1	00000000	2	00000000	2	00000000
0	00000000	4	00000000	0	00000000	0	00000000	1	00000000	0	00000000	0	00000000
0	00000000	5	00000000	0	00000000	0	00000000	2	00000000	1	00000000	0	00000000
2	00000000	5	00000000	0	00000000	0	00000000	3	00000000	2	00000000	1	00000000

999999

= 18PROJECT WEIGHTS FOR ATTRIBUTE # 4(SAME ORDER AS NAMES):

0 13043478 0 02608696 0 26086956 0 10434783 0 08695652 0 13043478 0 26086956

= 19PROJECT MATRIX FOR ATTRIBUTE # 5:

1	00000000	7	00000000	0	00000000	0	00000000	0	00000000	0	00000000	0	00000000
0	00000000	1	00000000	0	00000000	0	00000000	0	00000000	0	00000000	0	00000000
5	00000000	9	00000000	1	00000000	4	00000000	6	00000000	2	00000000	1	00000000
2	00000000	6	00000000	0	00000000	1	00000000	4	00000000	0	00000000	0	00000000
3	00000000	5	00000000	0	00000000	0	00000000	1	00000000	0	00000000	0	00000000
2	00000000	6	00000000	0	00000000	2	00000000	3	00000000	1	00000000	0	00000000
4	00000000	7	00000000	0	00000000	3	00000000	5	00000000	1	00000000	1	00000000

999999

= 20PROJECT WEIGHTS FOR ATTRIBUTE # 5(SAME ORDER AS NAMES):

0 06382979 0 02836879 0 34042552 0 08310638 0 05673759 0 17021276 0 25531915

= 21PROJECT MATRIX FOR ATTRIBUTE # 6:

1	00000000	7	00000000	2	00000000	0	00000000	1	00000000	0	00000000	0	00000000
0	00000000	1	00000000	0	00000000	0	00000000	0	00000000	0	00000000	0	00000000
0	00000000	4	00000000	1	00000000	0	00000000	0	00000000	0	00000000	0	00000000
3	00000000	5	00000000	4	00000000	1	00000000	1	00000000	0	00000000	0	00000000
0	00000000	4	00000000	4	00000000	0	00000000	1	00000000	0	00000000	0	00000000
5	00000000	6	00000000	5	00000000	2	00000000	4	00000000	1	00000000	0	00000000
7	00000000	7	00000000	6	00000000	3	00000000	5	00000000	1	00000000	1	00000000

999999

= 22PROJECT WEIGHTS FOR ATTRIBUTE # 6(SAME ORDER AS NAMES):

0 03133471 0 02874743 0 03749487 0 14373717 0 07186858 0 28747433 0 35934290

= 23PROJECT MATRIX FOR ATTRIBUTE # 7:

1	00000000	3	00000000	0	00000000	0	00000000	0	00000000	0	00000000	4	00000000
0	00000000	1	00000000	0	00000000	0	00000000	0	00000000	0	00000000	2	00000000
7	00000000	8	00000000	1	00000000	5	00000000	5	00000000	4	00000000	7	00000000
1	00000000	4	00000000	0	00000000	1	00000000	1	00000000	0	00000000	4	00000000
2	00000000	4	00000000	0	00000000	0	00000000	1	00000000	0	00000000	4	00000000
3	00000000	5	00000000	0	00000000	1	00000000	2	00000000	1	00000000	4	00000000
0	00000000	0	00000000	0	00000000	0	00000000	0	00000000	0	00000000	1	00000000

999999

= 24PROJECT WEIGHTS FOR ATTRIBUTE # 7(SAME ORDER AS NAMES):
 0.07347170 0.02641509 0.52830189 0.10366038 0.10366038 0.13207347 0.02641509
 = 25FINAL PROJECT WEIGHTS:(SAME ORDER AS NAMES)
 0.07972055 0.02883406 0.27815160 0.10951868 0.07471027 0.20136585 0.22749901
 999999

15 MISSING PROJECT VALUES. ONE REP ONLY

7 RESUME PRESENTATION

6 00000000 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000
 2 00000000 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000
 999999

- 14PROJECT WEIGHTS FOR ATTRIBUTE # 2(SAME ORDER AS NAMES)

0 09343434 0 01363636 0 57272726 0 03181818 0 04772727 0 04772727 0 19090909

- 15PROJECT MATRIX FOR ATTRIBUTE # 3:

1 00000000 5 00000000 0 00000000 1 00000000 2 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 3 00000000 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000
 2 00000000 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000
 3 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 999999

- 16PROJECT WEIGHTS FOR ATTRIBUTE # 3(SAME ORDER AS NAMES):

0 09345794 0 01849159 0 28037384 0 09345794 0 04672897 0 18691589 0 28037384

- 17PROJECT MATRIX FOR ATTRIBUTE # 4:

1 00000000 7 00000000 0 00000000 4 00000000 1 00000000 2 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 5 00000000 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000
 2 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 999999

- 18PROJECT WEIGHTS FOR ATTRIBUTE # 4(SAME ORDER AS NAMES):

0 10108303 0 01444043 0 50541314 0 02527076 0 10108303 0 03034151 0 20216605

- 19PROJECT MATRIX FOR ATTRIBUTE # 5:

1 00000000 7 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 5 00000000 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000
 2 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000
 3 00000000 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000
 4 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 999999

- 20PROJECT WEIGHTS FOR ATTRIBUTE # 5(SAME ORDER AS NAMES):

0 05833333 0 00833333 0 29166669 0 11666667 0 11666667 0 17500001 0 23333333

- 21PROJECT MATRIX FOR ATTRIBUTE # 6:

1 00000000 7 00000000 2 00000000 0 00000000 1 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000
 3 00000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000
 5 00000000 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000
 7 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 999999

- 22PROJECT WEIGHTS FOR ATTRIBUTE # 6(SAME ORDER AS NAMES):

0 05668017 0 00809717 0 02834008 0 17004049 0 03668017 0 28340080 0 39676115

- 23PROJECT MATRIX FOR ATTRIBUTE # 7:

1 00000000 3 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 7 00000000 0 00000000 1 00000000 0 00000000 0 00000000 0 00000000
 1 50000000 0 00000000 0 00000000 1 00000000 0 00000000 0 00000000
 2 00000000 0 00000000 0 00000000 0 00000000 1 00000000 0 00000000
 3 00000000 0 00000000 0 00000000 0 00000000 0 00000000 1 00000000
 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000 0 00000000
 999999

= 24PROJECT WEIGHTS FOR ATTRIBUTE # 7(SAME ORDER AS NAMES):
 0.06629834 0.02209945 0.46408841 0.09944752 0.13259669 0.19889504 0.01657459
 = 25FINAL PROJECT WEIGHTS: (SAME ORDER AS NAMES)
 0.07385347 0.01710458 0.26636171 0.10728279 0.07285835 0.19011517 0.27242392
 999999

APPENDIX C
COPY OF COMMENTED PROGRAM

[illegible]

VAX FORTRAN V4.3-148
DO2: [COLBURN]AUSER12.FOR:215-Oct-1985 09:37:33
13-Oct-1985 00:00:00

USER

```

C D ---
C ---
27 C ---
C ---
28 C ---
C ---
29 C ---
30 C ---
31 C ---
32 C ---
C D ---
23 C ---
26 *
24 C ---
25 C ---
C ---
C ---
C D ---
C ---

```

```

END IF (6.*) ('MAKE CHANGES')
WRITE (CHOICE EQ 1) THEN
  CHANGENAME
  WRITE (6,27) (UNAME)
  FORMAT (5,23) (UNAME)
  READ (5,23) (CHOICE EQ 2) THEN
    ELCHANGE (ORGANIZATION)
    WRITE (6,28) (ORGZ)
    FORMAT (5,23) (ORGZ)
    READ (5,23) (ORGZ)
    ELCHANGE (PURPOSE)
    WRITE (6,29) (OLD PURPOSE IS: ' ')
    DO 1=1,5
      WRITE (6,30) (NEW PURPOSE IS: ' ')
      IF (NPURP(1) EQ ' ') GOTO 29
      WRITE (6,25) (NPURP(1))
      CONTINUE
    END DO
    WRITE (6,31) ('PLEASE ENTER NEW PURPOSE: ' )
    DO 1=1,5
      WRITE (6,32) (NPURP(1))
      READ (5,23) (NPURP(1))
      CONTINUE
    END DO
    ELCHANGE (CHOICE EQ 4) THEN
      WRITE (6,33) ('PLEASE ENTER YOUR NAME: ' )
      FORMAT (5,23) (UNAME)
      READ (5,23) (UNAME)
      DO 1=1,5
        WRITE (6,34) (NAME: ' /X,A/' , ORGANIZATION: ' /X,A/' , PURPOSE: ' )
        IF (NPURP(1) EQ ' ') GOTO 32
        WRITE (6,25) (NPURP(1))
        CONTINUE
      END DO
      ELCHANGE (CHOICE EQ 5) THEN
        USER NEEDS HELP
        CALL NHHELP(O)
        END DO
      ELSE WRITE (6,*) ('ENTER HEADER INFORMATION')
        DELTAG=1
        WRITE (6,35) ('PLEASE ENTER YOUR NAME: ' )
        FORMAT (5,23) (UNAME)
        READ (5,23) (UNAME)
        WRITE (6,36) (ORGZ)
        FORMAT (5,23) (ORGZ)
        WRITE (6,37) ('ORGANIZATION (DLX, DLXB, ETC): ' )
        CONTINUE
        WRITE (6,38) ('PURPOSE (IF THIS FILE IS OFFERING A BLANK LINE, ENTER A MAXIMUM OF FIVE LINES. ENTERING A BLANK LINE, TO QUIT BEFORE FIVE LINES.)')
        DO 1=1,5
          READ (5,23) (NPURP(1))
          IF (NPURP(1) EQ ' ') GOTO 24
          CONTINUE
        END DO
        WRITE (6,25) (NPURP(1),I=1,5)
        FORMAT (1X,A)
        IF (MENUOO(2) EQ '1') THEN
          END IF
          CHOICE=1
          ELCHANGE=8
          CHOICE=8
          END IF
          ELCHANGE (CHOICE EQ 1) THEN
            MODEL=1
            CALL MOD1
            MAKE IT IMPOSSIBLE TO RUN ANY OTHER MODEL EXCEPT MODEL 5
            DO 1=1,5
              MENUOO(1)='##'
              CONTINUE
            END DO
            CHOICE=8
            ELCHANGE (CHOICE EQ 2) THEN
              CALL MOD2
              MODEL=2
              MAKE IT IMPOSSIBLE TO RUN ANY MODEL EXCEPT MODEL 5
            END IF
          C D ---
          C ---

```


USER

VARIABLES

Address	Type	Name	Attributes	References
2-00000012	CHAR	ANSWER		
..	I*4	CHOICE		
10-00000000	I*4	CLS		
2-00000014	I*4	HEADFLAG		
..	I			
AP-000000004e	I*4	INFILE		
..	I*4			
5-000000004	I*4	MAXATR		
4-000000000	I*4	MAXPRJ		
..	I*4	MODEL		
4-000000008	I*4	NATTRS		
4-000000004	I*4	NPROUS		
3-0000001E0	CHAR	ORGZ		
3-000000190	CHAR	UNAME		

ARRAYS

Address	Type	Name	Attributes	Bytes	Dimensions	References
8-000001E0	R*4	AIMATR	COMM	1600	{20}	
8-000000000	CHAR	AINAME	COMM	480	{20}	
9-000000000	R*4	AIRPRD	COMM	320000	{200, 200, 20}	
8-000000820	R*4	AIRPTS	COMM	80	{5}	
2-000000000	CHAR	MENU00		18		
3-000000000	CHAR	NPURP	COMM	400	{5}	
7-000000000	R*4	PRNAME	COMM	160000	{200, 200}	
6-000000000	CHAR	PRNAME	COMM	4800	{200}	
9-000000100	R*4	PRNFS	COMM	800	{200}	

LABELS

Address	Label	References
1-000002EA	1'	134#
1-000000E3	1'	134#
1-00000026	8'	99#
1-00000014	9'	98#
1-00000014	10'	98#
1-000002F8	11'	100#
1-000000303	20'	11#
1-0000003F3	21'	11#
1-000000484	23'	53#
0-00000050E	24'	50#
1-00000050E	25'	70
1-000000485	26'	213#
1-0000003F5	27'	207#
1-000000421	28'	168#
0-000000413	29	75
0-000000473	30	87
0-000000453	31	84#
0-0000004EF	32	90

15-Oct-1985 09:37:33 VAX FORTRAN V4.3-148 DO02:COLBURNJAUSER12.FOR:2

USER

FUNCTIONS AND SUBROUTINES REFERENCED

Type Name

I*4 LIB\$INDEX

MOD1

MOD2

MOD3

MOD4

MOD5

NHELP

NSAVE

References

151

114

237

235

245

252

260

196

275

267

15-Oct-1985 09:37:33 YAX FORTRAN V4.3-148
13-Oct-1985 00:00:00 0002: [COLBURN] AUSER 12 FOR: 2

Page 6

DLTMT

PROGRAM SECTIONS

Name

0 3CODE
1 3LOCAL

Bytes Attributes

300
160092

PIC CON REL ECL SUB NOEXE RD NOWRT LONG
PIC CON REL ECL NOVAR NOEXE RD NOWRT LONG

Total Space Allocated

160430

ENTRY POINTS

Address Type Name

0-00000000 DLTMT

References

1#

VARIABLES

Address Type Name

**
**
1:4 I
1:4 J
1:4 MAXSIZ
** NEW
1:4 NUMEL
2-00027100 CHAR TEST

Attributes References

29
29
29
33

37-
38-
39-
40-
41-
42-
43-
44-
45-
46-
47-
48-
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ARRAYS

Address	Type	Name	Attributes	Bytes	Dimensions	References	69=	92(2)	94=
4-000001E0	R*4	ATMAIR	COMM	1600	(20, 20)	31	41		
4-00000000	CHAR	ATNAME	COMM	480	{20}	106-	47		
4-00000080	R*4	ATUTS	COMM	160000	{200, 200}	31	41		
3-00000000	R*4	PRMAIR	COMM	800	(200)	106-	67=	81(2)	85=
3-00027100	R*4	PRWTS	COMM			30	41		

LABELS

Address	Label	References
1-00000000	1;	57#
1-00000000	2;	54#
1-00000000	3;	53#
1-00000000	8;	74#
		93

VAX FORTRAN V4 3-148
0002: [COLBURN]AUSER 12.FOR:213-Oct-1985 09:37:33
13-Oct-1985 00:00:00

SUBROUTINE MATGEN(NUMEL,MATRIX,WEIGHTS,MAXSIZ)

```

*****
* MATGEN PRODUCES AN LP FORMULATION FOR PROJECT (OR ATTRIBUTE) *
* COMPARISONS PASSED IN ARRAY MATRIX. WEIGHTS ARE RETURNED IN *
* ELEMENTS (PROJECTS OR ATTRIBUTES). WEIGHTS ARE RETURNED IN *
* PARAMETER WEIGHTS. *****

```

GLOSSARY OF VARIABLES

```

--- GLOSSARY OF VARIABLES
*** NOTE: MORE INFORMATION CAN BE FOUND ABOUT THE VARIABLES MARKED '(LINDO)'
*** IN THE LINDO USER'S MANUAL

```

```

NAME      TYPE      RANGE      DEFINITION
ALPHA     REAL      0..9      INTEGER REPT. OF DIGITS
QUAL      REAL      ANY       REDUCED COST OF A USE (LINDO)
IDROW     INT      ANY       NUMBER OF CURRENT ROW (LINDO)
IROW      INT      ANY       NUMBER OF CURRENT ROW (LINDO)
IROW      INT      ANY       ROWS WITH NONZERO COEFFICIENTS
IROW      INT      ANY       LINDO ORDER
KONDN     INT      ANY       LINDO ORDER
KONDN     INT      ANY       LINDO ORDER
MATRIX    REAL      ANY       (2-INFEASIBLE) STATUS FROM LINDO
MAXSIZ    INT      ANY       TEMPORARY MATRIX
MAXSIZ    INT      ANY       TEMPORARY MATRIX
MAXSIZ    INT      ANY       TEMPORARY MATRIX
NAME      INT      ANY       TEMPORARY MATRIX
NONZ      INT      ANY       TEMPORARY MATRIX
NUMCOMP   INT      ANY       TEMPORARY MATRIX
NUMEL     INT      ANY       TEMPORARY MATRIX
PRIMAL    REAL      ANY       TEMPORARY MATRIX
ROWPOS    REAL      ANY       TEMPORARY MATRIX
S         REAL      ANY       TEMPORARY MATRIX
TRUE      REAL      ANY       TEMPORARY MATRIX
VAL       REAL      ANY       TEMPORARY MATRIX
WEIGHTS   REAL      ANY       TEMPORARY MATRIX

```

```

REAL MATRIX(*)
VAL(200)
PRIMAL
INTEGER NUMEL(200,200)

```

```

NAME      TYPE      RANGE      DEFINITION
ALPHA     REAL      0..9      INTEGER REPT. OF DIGITS
QUAL      REAL      ANY       REDUCED COST OF A USE (LINDO)
IDROW     INT      ANY       NUMBER OF CURRENT ROW (LINDO)
IROW      INT      ANY       NUMBER OF CURRENT ROW (LINDO)
IROW      INT      ANY       ROWS WITH NONZERO COEFFICIENTS
IROW      INT      ANY       LINDO ORDER
KONDN     INT      ANY       LINDO ORDER
KONDN     INT      ANY       LINDO ORDER
MATRIX    REAL      ANY       (2-INFEASIBLE) STATUS FROM LINDO
MAXSIZ    INT      ANY       TEMPORARY MATRIX
MAXSIZ    INT      ANY       TEMPORARY MATRIX
MAXSIZ    INT      ANY       TEMPORARY MATRIX
NAME      INT      ANY       TEMPORARY MATRIX
NONZ      INT      ANY       TEMPORARY MATRIX
NUMCOMP   INT      ANY       TEMPORARY MATRIX
NUMEL     INT      ANY       TEMPORARY MATRIX
PRIMAL    REAL      ANY       TEMPORARY MATRIX
ROWPOS    REAL      ANY       TEMPORARY MATRIX
S         REAL      ANY       TEMPORARY MATRIX
TRUE      REAL      ANY       TEMPORARY MATRIX
VAL       REAL      ANY       TEMPORARY MATRIX
WEIGHTS   REAL      ANY       TEMPORARY MATRIX

```

LOGICAL DIMENSION MATRIX(MAXSIZ,MAXSIZ)

WRITE(6,*)(ENTERING SUBROUTINE MATGEN')

```

INITIALIZE VARIABLES
I=0
KONDN=0
L=0
NONZ=0

```


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D002:[COLBURN]AUSER12.FOR;2

15-Oct-1985 08:37:33
13-Oct-1985 00:00:00

MATGEN

```

C ***
      IDROW=0
      NUMCOMP=0
      TRUBLE=.FALSE.
      PRIMAL=0
      DUAL=0
      INITIALIZE ARRAYS
      DO I=1,200
        VAL(I)=0
        IROW(I)=0
        DO J=1,200
          ROWPOS(I,J)=0
        END DO
      END DO

C ***
      INITIALIZE LINDO SYSTEM
      CALL LINDO
      SET UP OBJECTIVE (FIRST ROW OF LP)
      CALL DEFROW(1,0,1DROW,TRUBLE)

C ***
      FORMAT(200(5X,F9.4))
      FIND NUMBER OF COMPARISONS AND DEFINE A ROW FOR EACH
      DO I=1,NUMEL
        IF (I.NE.1) AND MATRX(I,J).NE.O) THEN
          NUMCOMP=NUMCOMP+1
          CALL DEFROW(I,0,1DROW,TRUBLE)
          ROWPOS(I,J)=IDROW
        END IF
      END DO

C ***
      DEFINE A NORMALIZING ROW
      CALL DEFROW(0,1,DROW,TRUBLE)
      NOTICE- THE VALUE IN IDROW IS USED-DO NOT MODIFY
      FORMAT(200(3X,I3))

C ***
      GENERATE WEIGHT VARIABLES
      NAME(1)=W
      DO I=1,NUMEL
        NONZ=0
        CALCULATE COLUMN NAME
        K=1
        DO J=6,200
          L=(K/10)+10
          NAME(J)=ALPHA(K-L)
          K=K/10
        END DO

C ***
      FIND ALL NON-ZERO COEFFICIENTS FOR THIS COLUMN
      DO I=1,NUMEL
        IF (ROWPOS(I,I).NE.O) THEN
          NONZ=NONZ+1
          VAL(NONZ)=ROWPOS(I,I)
          IROW(NONZ)=I
        ELSE IF (ROWPOS(I,I).NE.O) THEN
          NONZ=NONZ+1
          VAL(NONZ)=-(MATRX(I,I))
          IROW(NONZ)=I
        END IF
      END DO
      INCLUDE NORMALIZING ROW
      NONZ=NONZ+1
      VAL(NONZ)=1
      IROW(NONZ)=1
      CALL APBOL(NAME,NONZ,VAL,IROW,TRUBLE)
      FORMAT(5X,K',5X,VAL',5X,IROW',200(/5X,I3,3X,F9.4))
      END DO

C ***
      GENERATE S (ABSOLUTE DEVIATION) VARIABLES
      NAME(1)=S
      IROW(1)=1

```


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 13-Oct-1985 00:00:00 D002:[COLBURN]AUSER12.FOR:2

MATGEN

2-00027788 R*4 PRIMAL
 2-000277A4 I*4 S
 2-000277AB L*4 TRUBLE
 2-000277AO I*4 W

46 83=
 51D 157=
 58 82=
 51D 122

186A 187
 97A 108A

115A 150A 171A

ARRAYS

Address Type Name
 2-00027760 I*4 ALPHA
 2-000277420 I*4 IRO
 AP-000000008 R*4 MATRIX
 2-00027740 I*4 NAME
 2-00000320 I*4 ROWPOS
 2-00000000 R*4 VAL
 AP-00000000C R*4 WEIGHTS

References

Bytes Dimensions

40 {0:9}
 800 {0:9}
 ** (* *)
 32 {8}
 160000 (200, 200)
 800 (200)
 ** (*)

51D
 150A
 51D
 156=
 140
 87=
 150A

128=
 138=
 142=
 141A
 140
 87=
 159=
 146

199=
 170=
 129=
 109=
 136
 142=
 148=
 187=

LABELS

Address Label
 ** 1'
 ** 2'
 ** 5'
 ** 6'
 1-0000000C 1976'

References

151#
 152#
 118#
 109#
 177#
 178#

FUNCTIONS AND SUBROUTINES REFERENCED

Type Name
 APPCOL
 DEFROW
 GO
 INIT
 REPVAR

References

150
 157
 181
 185
 171 108 115

[illegible]

139(2)=

I*4 K

```

1-000000004
4-000000004
3-000000008
3-000000004

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COMM
COMM
COMM
COMM

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59
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157
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234

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211

137

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164

243

246

140=

141

203=

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8-000000000
2-000000652
2-000000682

```

COMM

```

13
177=
58
250=

```

238

178

131

240

179

135=

ARRAYS

Address	Type	Name	Attributes	Bytes	Dimensions	References
9-000000000	R*4	AIRPRO	COMM	32000000	{200, 200, 20}	13D 149=
2-000000640	CHAR	MENU11		16		191=
2-000000000	I*4	POINT		800	(200)	104=
6-000000000	R*4	PRMATR	COMM	160000	(200, 200)	218=
5-000000000	CHAR	PRNAME	COMM	4800	(200)	191
6-000027100	R*4	PRWTS	COMM	800	(200)	161=
3-000000320	I*4	RANK	COMM	800	(200)	213
1-000000000	R*4	WTMTX	COMM	16000	(200, 20)	229(2)=
						234

LABELS

Address	Label	References
1-000001195	1'	76#
1-000001195	2'	77#
1-000001195	3'	80#
1-000001195	4'	90#
1-000001195	5'	161
0-00000066E	6'	112#
0-000000508	7'	178#
0-000000341	8'	179#
0-00000031A	339'	124
0-00000031A	444'	124
1-000000316	445'	139#
1-000000316	446'	135#
1-00000031F	447'	135#
1-000000398	448'	140#
1-000000323	450'	143(2)
0-00000044C	776'	143(2)
0-000000474	777'	154#
0-0000004A4	778'	154#
0-000000330	1234'	154#
1-00000033F	1235'	204#
1-00000034A	777'	204#
1-00000038B	777'	244#
1-000000381	7779'	244#
1-0000003DD	7780'	246
1-00000040D	7781'	250

MOD 1

FUNCTIONS AND SUBROUTINES REFERENCED

Type	Name
	DLIMAT
	FORCLOSE
	FOROPEN
	LIBINDEX
1*4	MAIGEN
	MAHELP

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References

252
253
254
255
256
257

[illegible]

[illegible]

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MOD2

VARIABLES

Address	Type	Name	Attributes	References
2-00000658	CHAR	ANSWER		63= 408= 60D 130D 3332 3335
2-0000065A	CHAR	CHAR		130D 3332 3335
2-00000690	I*4	CHOICE		130D 3332 3335
11-00000000	I*4	CLS	COMM	130D 3332 3335
2-0000065F	CHAR	FNAME		130D 3332 3335
2-00000694	I*4	I		130D 3332 3335
**	I*4	II		130D 3332 3335
**	R*4	INDX		130D 3332 3335
2-000006A4	I*4	INUNIT		130D 3332 3335
2-00000698	I*4	J		130D 3332 3335
2-0000069C	I*4	K		130D 3332 3335
5-00000004	I*4	MAXATR	COMM	130D 3332 3335
3-00000000	I*4	MAXPRJ	COMM	130D 3332 3335
3-00000000	I*4	MODEL	COMM	130D 3332 3335
3-00000008	I*4	NATIFS	COMM	130D 3332 3335
3-00000004	I*4	NPROJS	COMM	130D 3332 3335
2-000006A0	I*4	NUM		130D 3332 3335
10-00000000	R*4	OBJ		130D 3332 3335
2-00000677	CHAR	TEMP	COMM	130D 3332 3335
2-0000065B	CHAR	TEST		130D 3332 3335
2-000006A8	L*4	WGFLG		130D 3332 3335

ARRAYS

Address	Type	Name	Attributes	Bytes	Dimensions	References
4-000001E0	R*4	ATMATR	COMM	1600	(20, 20)	8 409A
4-00000000	CHAR	ATNAME	COMM	480	(20)	244 451
6-00000000	R*4	ATRPRO	COMM	3200000	(200, 200, 20)	354 358
4-00000820	R*4	ATWTS	COMM	80	(20)	392 393D
2-00000640	CHAR	MENU12		24	(12)	180= 300=

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 13-Oct-1985 00:00:00 D002:COLBURN\AUUSER12.FOR:2

2-00000320	I*4	POINT	800	(200)	379= 436= 479(2) 325= 285= 443(3) 442= 493= 13	376(3) 377 431 444(3) 485(3) 321 467A 477= 500 426 472= 387(2) 453= 500 426= 474	378(3) 435(3) 486= 323= 278 435(3) 392= 490= 72
8-00000000	R*4	PRMATR	160000	(200, 200)			
7-00000000	CHAR	PRNAME	4800	(200)			
8-00027100	R*4	PRWTS	800	(200)			
2-00000000	I*4	RANK	800	(200)			
9-00000000	R*4	WTMTX	16000	(200, 20)			

LABELS

Address	Label
1-00000383	1
1-00000388	2
1-000005DF	3
0-000001D4	5
0-0000054C	6
0-00000820	7
1-000005E1	8
0-00000E1A	19
0-000005B4	17
0-000008C6	26
1-0000051C	33
1-0000051C	39
1-0000051C	44
1-0000051C	45
1-000005EC	46
1-0000051C	47
1-0000051C	48
1-0000051C	49
1-0000051C	50
0-00000934	51
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0-00000934	

MOD2

FUNCTIONS AND SUBROUTINES REFERENCED

Type Name
DLT MAT
FORSCLOSE
FOROPEN
LIBINDEX
1*4
MATGEN
NHLEP

References

409
177
158
308
118
368
309
457
331
301
378
122
423

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MOD3

```

POINT(200).
PROVS:
NATPR:
MAXPR:
NVOATER/O/.
INFILE/29/.
NUMBER/69/.
LOGICAL YNFLAG/.FALSE./
WRITE(6,*)('ENTERING SUBROUTINE MOD3')
DO 1 CLS(1) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 2 CLS(2) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 3 CLS(3) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 4 CLS(4) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 5 CLS(5) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 6 CLS(6) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 7 CLS(7) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 8 CLS(8) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 9 CLS(9) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 10 CLS(10) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 11 CLS(11) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 12 CLS(12) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 13 CLS(13) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 14 CLS(14) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 15 CLS(15) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 16 CLS(16) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 17 CLS(17) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 18 CLS(18) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 19 CLS(19) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 20 CLS(20) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 21 CLS(21) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 22 CLS(22) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 23 CLS(23) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 24 CLS(24) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 25 CLS(25) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 26 CLS(26) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 27 CLS(27) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 28 CLS(28) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 29 CLS(29) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 30 CLS(30) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 31 CLS(31) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 32 CLS(32) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 33 CLS(33) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 34 CLS(34) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 35 CLS(35) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 36 CLS(36) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 37 CLS(37) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 38 CLS(38) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 39 CLS(39) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 40 CLS(40) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 41 CLS(41) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 42 CLS(42) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 43 CLS(43) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 44 CLS(44) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 45 CLS(45) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 46 CLS(46) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 47 CLS(47) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 48 CLS(48) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 49 CLS(49) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 50 CLS(50) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 51 CLS(51) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 52 CLS(52) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 53 CLS(53) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 54 CLS(54) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 55 CLS(55) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 56 CLS(56) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 57 CLS(57) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 58 CLS(58) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 59 CLS(59) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 60 CLS(60) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 61 CLS(61) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 62 CLS(62) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 63 CLS(63) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 64 CLS(64) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 65 CLS(65) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 66 CLS(66) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 67 CLS(67) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 68 CLS(68) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 69 CLS(69) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 70 CLS(70) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 71 CLS(71) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 72 CLS(72) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 73 CLS(73) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 74 CLS(74) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 75 CLS(75) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 76 CLS(76) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 77 CLS(77) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 78 CLS(78) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 79 CLS(79) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 80 CLS(80) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 81 CLS(81) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 82 CLS(82) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 83 CLS(83) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 84 CLS(84) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 85 CLS(85) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 86 CLS(86) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 87 CLS(87) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 88 CLS(88) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 89 CLS(89) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 90 CLS(90) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 91 CLS(91) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 92 CLS(92) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 93 CLS(93) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 94 CLS(94) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 95 CLS(95) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 96 CLS(96) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 97 CLS(97) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 98 CLS(98) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 99 CLS(99) CLS) MENU 1.3 -- VOTER MODEL'//)
DO 100 CLS(100) CLS) MENU 1.3 -- VOTER MODEL'//)

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 13-0ct-1985 08:00:00 D002:COLBURN\AUSER12.FOR:2

MOD3
 PROGRAM SECTIONS

Name	Bytes	Attributes
CODE	3959	
DATA	1014	
LOCAL	8376	
LEAD	1	
MAX	1	
PRI	4800	
PRO	16080	
BIGWTS	16000	
CONTROL	8	
Total Space Allocated	194973	

ENTRY POINTS

Address	Type	Name	References
0-00000000	MOD3		1#

VARIABLES

Address	Type	Name	Attributes	References
2-00001EFC	CHAR	ANSWER		61
2-00001F60	I*4	CHOICE		216D
8-00000000	I*4	CLS		180
**	I*4	I		181
2-00001F68	I*4	INFILE		182
2-00001F70	I*4	INFLAG		183
**	I*4	K		184
4-00000000	I*4	MAXATR		185
3-00000000	I*4	MODEL		186
3-00000000	I*4	NATERS		187
2-00001F6C	I*4	NUMBER		188
**	R*4	RRR		189
2-00001F5C	CHAR	TEST		190
2-00001F16	CHAR	TEXT		191
2-00001EFE	CHAR	TEXT		192

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MOD3

ARRAYS

Address	Type	Name	Attributes	Bytes	Dimensions	References
2-00001C2C	CHAR	INNAME		720	(30)	53 339 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000

LABELS

Address	Label	References
1-000000223	1	93
1-000000248	2	94
1-000000318	3	95
1-000000323	4	104
1-000000323	5	109
1-000000323	6	151
1-000000323	7	290
1-000000323	8	137
1-000000323	9	138
1-000000323	10	139
1-000000323	11	140
1-000000323	12	141
1-000000323	13	142
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1-000000323	21	150
1-000000323	22	151
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1-000000323	231	360
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1-000000323	233	362
1-000000323	234	363
1-000000323	235	364
1-000000323	236	3

[illegible]

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MOD4

2-00027100	I*4	POINT	800	(200)	100 778 813(2) 764A	714(3) 734(3) 780 824 655	719 773 825(2) 661	729(3) 777 795 826	761
6-00000000	R*4	PRMATR	160000	(200, 200)					
5-00000000	CHAR	PRNAME	4800	(200)	10 40 41	22(2) 40(2) 40(2)	255 470(3) 500(3)	335 440 604A 607A 634 630	335
6-00027100	R*4	PRWTS	800	(200)	76 81 82	77(2) 81(2) 81(2)	795 825(2) 825(2)	795 825(2) 825(2)	795
2-00027420	I*4	RANK	800	(200)	100 100 100	100 100 100	100 100 100	100 100 100	100
2-000277A4	I*4	SORPOS	800	(200)	100 100 100	100 100 100	100 100 100	100 100 100	100
2-00027AC4	I*4	SOURCE	800	(200)	100 100 100	100 100 100	100 100 100	100 100 100	100
2-00027DE4	I*4	TEMPLIST	800	(200)	100 100 100	100 100 100	100 100 100	100 100 100	100
2-00028104	CHAR	TEMPNAME	4800	(200)	100 100 100	100 100 100	100 100 100	100 100 100	100
7-00000000	R*4	WTMTX	16000	(200, 20)	210 210 210	210 210 210	210 210 210	210 210 210	210

LABELS

Address Label

References

1-0000038D	1	127	271	127	275	285	288	288	212
1-0000009C	2	135	148	135	309	440	152	152	
1-000003E8	3	136	238	136	343	395	196	196	
1-00000420	4	164		164					
1-00000520	5	216		216					
1-00000422	6	139	281	139					
1-000003DF	8	131	161	131	193	209	230	230	278
1-000001EQ	21	164	758	164	446	459	549	549	639
1-00000524	22	167	173	167	792	838	848	848	
1-00000250	23	171		171	180	188			
1-000002C0	24	186		186					
1-00000358	25	187		187					
1-0000186E	26	186		186					
1-000008CE	27	173		173					
1-000000356	28	181		181					
1-000000528	30	196		196					
1-000000528	31	199	214	199	236				
1-00000052D	33	202	218	202	240				
1-000000531	34	204		204					
1-00000624	40	216		216					
1-0000083C	51	242		242					
1-00000788	52	238		238					
1-00000458	60	314	318	314	328	858			
1-00000542	61	339		339					
1-000007ED	71	349		349					
1-00000020	72	353	366	353					

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SUBROUTINE MOD5

 * MOD5 IS FOR THE CONSTRAINTS MODEL. ALLOWS USER TO DECIDE WHICH
 * PROJECTS TO FUND BASED ON AVAILABLE RESOURCES. RESOURCE REQUIREMENTS,
 * AND PROJECT WEIGHTS.

COMMON/HEAD/MODEL, NPROVS, NATTRS
 COMMON/MAXPRJ, MAXATR
 COMMON/PRJ1/PRNAME(200)
 COMMON/PROJ/PRNAME(200), PRWTS(200)
 COMMON/COST2/COST(200)
 COMMON/CONST/CONST(200)
 COMMON/CONTROL/CLS

NAME	USE	TYPE	RANGE	DEFINITION
ALPHA	UI,U	REAL	0.9, 0.9	CHARACTER REP. OF NUMERALS
AMOUNT	UI,U	REAL	ANY	AMOUNT OF CONSTRAINT AVAILABLE
ANSWER	UI,U	CHAR*2	ANY	USER'S ANSWER TO QUESTIONS
CHOICE	UI,U	INTEGER	0-7	CHOICE FROM MENU
CLS	UI,U	CHAR*2	ANY	CHARACTER
CONST	UI,U	REAL	0-1	VALUE OF CONSTRAINT
COST	UI,U	REAL	0-1	FUND PROJECT OR NOT
FNAME	UI,U	CHAR*24	ANY	NAME OF INPUT FILE
IDROW	UI,U	CHAR*24	ANY	COUNTRY
INUNIT	UI,U	CHAR*24	ANY	ROW NUMBER (RETURNED BY LINDO)
PROJ	UI,U	CHAR*24	ANY	INPUT FILE
PROJ1	UI,U	CHAR*24	ANY	NUMBERS OF NONZERO ROWS (LINDO)
PROJ2	UI,U	CHAR*24	ANY	COUNTRY
PROJ3	UI,U	CHAR*24	ANY	STATUS (RETURNED BY LINDO)
PROJ4	UI,U	CHAR*24	ANY	TEMP
PROJ5	UI,U	CHAR*24	ANY	TEMP (RETURNED BY LINDO)
PROJ6	UI,U	CHAR*24	ANY	MAX NUMBER OF ATTRIBUTES
PROJ7	UI,U	CHAR*24	ANY	MAX NUMBER OF PROJECTS
PROJ8	UI,U	CHAR*24	ANY	HEADINGS FOR MENU
PROJ9	UI,U	CHAR*24	ANY	MODEL NUMBER
PROJ10	UI,U	CHAR*24	ANY	NAME OF COLUMN (LINDO)
PROJ11	UI,U	CHAR*24	ANY	NUMBER OF ATTRIBUTES
PROJ12	UI,U	CHAR*24	ANY	NUMBER OF CONSTRAINTS
PROJ13	UI,U	CHAR*24	ANY	NUMBER OF NONZERO COEFFICIENTS
PROJ14	UI,U	CHAR*24	ANY	NUMBER OF PROJECTS
PROJ15	UI,U	CHAR*24	ANY	PROJECT COMPARISONS
PROJ16	UI,U	CHAR*24	ANY	PROJECT NAMES
PROJ17	UI,U	CHAR*24	ANY	PROJECT WEIGHTS
PROJ18	UI,U	CHAR*24	ANY	RESOURCE REQUIREMENTS
PROJ19	UI,U	CHAR*24	ANY	TEMP USE
PROJ20	UI,U	CHAR*24	ANY	OUT OF SPACE (RETURNED BY LINDO)
PROJ21	UI,U	CHAR*24	ANY	UNITS OF RESOURCE
PROJ22	UI,U	CHAR*24	ANY	COEFFICIENT VALUES (LINDO)
PROJ23	UI,U	CHAR*24	ANY	PROJECT WEIGHTS FOR EA. ATR.

 * CHARACTER*2 MENU
 * CHARACTER*24 ANSWER
 * CHARACTER*24 PRNAME
 * CHARACTER*4 TEXT
 * CHARACTER*4 TEST
 * CHARACTER*4 CHOICE
 * CHARACTER*4 MODEL
 * CHARACTER*4 NATTRS
 * CHARACTER*4 MAXPRJ

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MOD5
PROGRAM SECTIONS

Name	Bytes	Attributes
CODE	2731	
LOCAL	1060	
HEAD	1773	
MAX	1	
PRO	4800	
CONSTR	160800	
BIGWTC	804	
CONTRL	160004	
Total Space Allocated	203951	

ENTRY POINTS

Address	Type	Name	References
0-00000000	MOD5		1#

VARIABLES

Address	Type	Name	Attributes	References
2-00004390	CHAR	ANSWER		
9-00000000	I*4	CLS		
7-00000000	R*4	COBJ		
2-00004392	CHAR	FRAME		
..	I*4	I		
2-000043DC	I*4	INUNIT		
2-000043C8	I*4	J		
..	I*4	K		
2-000043D4	I*4	KONDN		
4-00000004	I*4	MAXATR		
3-00000000	I*4	MODEL		
3-00000008	I*4	NATRSR		
2-000043D0	I*4	NCONSTR		
3-000043D8	I*4	NONZ		
2-000043C2	CHAR	TEST		
2-000043AA	CHAR	TEXT		
2-000043E0	I*4	TUBLE		

ARRAYS

Address	Type	Name	Attributes	Bytes	Dimensions	References
2-00000074	I*4	ALPHA		40	{9:9}	74D
2-0000009C	R*4	AMOUNT		80	{20}	90
2-00003FD0	CHAR	CONSTR		480	{20}	68
7-00000004	R*4	FCOST		800	{200}	13
2-00000000	I*4	TRD		84	{21}	17

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MODS

2-00003FC0	CHAR MENU15	16 (8)	108 =	128	150 =	182 =
2-00000054	I*4 NAME	32 (8)	215 =	262A		
5-00000000	R*4 PRMATR	160000 (200)	214 =	141 =	142	172 =
5-00000000	CHAR PRNAME	4800 (200)	213 =	184 =	178 =	258
6-00027100	R*4 PRWTS	800 (200)	212 =	298		
2-00000000	R*4 REQUIRE	16000 (200, 20)	211 =	260	227	262A
2-00004180	CHAR UNITS	480 (20)	210 =	208 =		
2-00003F6C	R*4 VAL	84 (20)	209 =	206 =		
8-00000000	R*4 WTM TX	16000 (200, 20)	208 =	298 =		

LABELS

Address Label

References

1-0000018A	1	108	109#	159	205	287
1-00000333	2	119#	120#			
1-00000068	3	140#	146			
1-00000154	4	164	165#			
1-0000033E	5	167	168#			
1-00000342	6	170#	171#			
1-00000347	7	172	173#			
1-000003C4	8	175#	176#			
1-0000034B	9	178	179#			
1-00000350	10	180#	181#			
1-000004D0	11	200#	201#			
1-0000038E	12	206	207#			
1-000003E5	13	284	285#			
1-0000035D	14	200	201#			
1-000003C5	15	234	235#			
1-00000335	16	135	136#			
0-0000049C	17	289	290#			
0-00000458	18	153(2)	154(2)			
0-00000477	19	187	188#			
0-000004C1	20	276	277#			

FUNCTIONS AND SUBROUTINES REFERENCED

Type Name

References

1*4	APPROX	262
	DEFAC	194
	FORCLOSE	
	FOROPEN	
	GO	
	INIT	
	INDEX	
	INTEL	
	NINTEQ	

[illegible]

NHELP

PROGRAM SECTIONS

Name
0 \$CODE
1 \$DATA
2 \$CONTROL

Bytes Attributes

583 PIC CON REL LCL NOEXE RD NOWRT LONG
189 PIC CON REL LCL NOEXE RD NOWRT LONG
4 PIC OVR REL LCL NOEXE RD NOWRT LONG

Total Space Allocated

1014

ENTRY POINTS

Address Type Name
0-00000000 NHHELP

References
1#

VARIABLES

Address Type Name
3-00000000 CHAR ANSWER
1*4
3-00000000 CLS
1*4
2-00000000 CHAR LINE
1*4
AP-00000000 MENU

Attributes References

COMM
22 32= 34 66= 67 71=
18 18= 55(3) 38 40 42 44 46
23 18= 52 39= 41= 43= 45= 47=
48 35= 37= 39= 41= 43= 45= 47=
24 35= 37= 39= 41= 43= 45= 47=
49= 53= 57A
18D

LABELS

Address Label
1-00000058 1'
1-00000087 2'
1-00000089 3'
1-000000C3 23'
0-00000210 777
0-0000022A 778
0-00000280 780
0-000001D4 781

References

27 28# 66 71
32 33#
55 36#
63 37#
57 60
58# 73#
60 74#
69#

FUNCTIONS AND SUBROUTINES REFERENCED

Type Name
FOR\$CLOSE
FOR\$OPEN

References

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NSAVE

```

3  FORMAT('003PURPOSE','5(/5X,A))
4  WRITE(OTFILE,4)(MODEL,1-5)/5X,I1)
5  FORMAT(OTFILE,5)(MAXPRJ,NPROJS,1-5)/5X,I1)
6  FORMAT(OTFILE,6)(MAXPRJ,NPROJS,1-5)/5X,I1)
7  FORMAT(OTFILE,7)(MAXPRJ,NPROJS,1-5)/5X,I1)
999  FORMAT(OTFILE,8)(MAXPRJ,NPROJS,1-5)/5X,I1)
88  FORMAT(OTFILE,9)(MAXPRJ,NPROJS,1-5)/5X,I1)
8  DO I=1,NATIRS
   DO J=1,NATIRS
      WRITE(OTFILE,8)(ATMATR(I,J),J=1,NATIRS)
   END DO
9  DO I=1,NATIRS
   DO J=1,NATIRS
      WRITE(OTFILE,9)(ATMATR(I,J),J=1,NATIRS)
   END DO
10  DO I=1,NATIRS
   DO J=1,NATIRS
      WRITE(OTFILE,10)(PRNAME(I),I=1,NPROJS)
   END DO
11  DO I=1,NATIRS
   DO J=1,NATIRS
      WRITE(OTFILE,11)(PROJECT MATRIX FOR ATTRIBUTE #',I3,')
   END DO
111  DO I=1,NATIRS
   DO J=1,NATIRS
      WRITE(OTFILE,111)(ATMATR(I,J),J=1,NPROJS)
   END DO
675  DO I=1,NATIRS
   DO J=1,NATIRS
      WRITE(OTFILE,675)(I,J)
   END DO
12  FORMAT(OTFILE,12)(I,J)
13  FORMAT(OTFILE,13)(I,J)
235  FORMAT(OTFILE,13)(I,J)
   IF (I.EQ.1) THEN
      WRITE(OTFILE,13)('YOU CARE FOR A PRINTED COPY (Y/N) ? [N]')
   ELSE
      WRITE(OTFILE,13)('ANSWER 50, 'Y' OR ANSWER 50, 'X') THEN
      IF (I.EQ.1) THEN
         WRITE(OTFILE,13)('UNIT=OTFILE,STATUS=PRINT')
      ELSE
         WRITE(OTFILE,13)('UNIT=OTFILE')
      END IF
   END IF
   IF (I.EQ.1) THEN
      WRITE(OTFILE,13)('LEAVING SUBROUTINE NSAVE')
   END IF
END

```

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NSAVE

PROGRAM SECTIONS

Name	Bytes	Attributes
1 \$CODE	1197	
2 \$LOCAL	587	
3 \$USEB	2000	
4 \$MAX	591	
5 \$PRO	4800	
6 \$AT	160800	
7 \$CPROJ	21500	
8 \$IGWTS	3200000	
10	16000	
Total Space Allocated	3386424	

ENTRY POINTS

Address	Type	Name	References
0-00000000	NSAVE		1#

VARIABLES

Address	Type	Name	Attributes	References
2-00000050	CHAR ANSWER			
2-00000000	CHAR FILENAME			
**	I*4	I	127=	64
**	I*4	J	128(2)	129(2)
**	I*4	K	129(3)	130(3)
**	I*4	L	130(2)	131(2)
**	I*4	M	131(3)	132(3)
5-00000004	MAXATR		107	107
5-00000000	MAXPRJ		108	108
4-00000000	MAXGPR		109	109
4-00000008	NATRS		110	110
4-00000004	NPROJS		111	111
2-00000000	CHAR OPFILE		112	112
3-00000190	CHAR UNAME		113	113

ARRAYS

Address	Type	Name	Attributes	Bytes	Dimensions	References
8-000001E0	R*4	ATMATR	COMM	1600	(20, 20)	13
8-00000000	CHAR AUNAME		COMM	480	(20, 200, 20)	13
9-00000000	R*4	ATPRD	COMM	3200000	(20, 200, 20)	13
9-00000000	R*4	ATWTS	COMM	80	(20, 200, 20)	13
3-00000000	CHAR NPURP		COMM	400	(5)	13
7-00000000	R*4	PRMATR	COMM	160000	(200, 200)	13
9-00000000	CHAR PRUNAME		COMM	4800	(200, 200)	13
7-00000000	R*4	PRWTS	COMM	800	(200, 200)	13
10-00000000	R*4	WTMTX	COMM	16000	(200, 20)	13

LABELS

Address	Label	References
1-00000048	1	75#
1-00000059	2	77
1-00000072	3	79
1-00000088	4	81
1-000000A9	5	83
1-000000D1	6	85

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NSAVE

```

-00000018 7.
-00000073 8.
-00000080 9.
-00000080 10.
-0000001E 11.
-00000026 12.
-0000002A 13.
-00000049 14.
-00000013 15.
-00000018 16.
-0000002A 17.
-00000028 18.
-00000012 19.
  
```

```

87
94
99
101
107
119
121
124#
125
126
128
130
  
```

FUNCTIONS AND SUBROUTINES REFERENCED

Type	Name	References
FOR\$CLOSE		130
FOR\$OPEN		132

[illegible]

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OUTSPC

[illegible]

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OUTSPC

PROGRAM SECTIONS

Name	Bytes	Attributes	
SCODE	31	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX
DATA	1	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX
LOCAL	6587	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX
COMMON	3200	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX
COMMON	22938	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX
COMMON	71	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX
COMMON	804	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX
Total Space Allocated			
	338090		

ENTRY POINTS

Address	Type	Name
0-00000000		OUTSPC

VARIABLES

Address	Type	Name	Attributes	References
**	R:4	ALPRWT		129
**	I:4	ALSD2		133
**	I:4	ATFLAG		133
**	I:4	ATNAME		133
**	I:4	ATNUM		133
2-0000002C	R:4	ATWTS		183
12-00000000	R:4	BHAX		129
12-00000000	R:4	COBJ		163
3-00000078	R:4	DELIA		216
3-00000080	R:4	DETERM		213
3-0000003C	R:4	DUAL		213
3-00000070	R:4	EPCOL		213
3-00000074	R:4	EPRHS		213
3-00000030	R:4	EPSLON		217A
3-00000048	R:4	FFLAG		217A
2-00000034	I:4	FINITY		217A
3-000000C8	I:4	LARG		217A
3-00000008	I:4	DIRM		169
3-00000008	I:4	FBAT		172
3-0000000C	I:4	LINKD		172
3-0000004C	I:4	NEAM		172
3-00000064	I:4	INFEAS		172
3-00000024	I:4	INIGR		181
3-0000005C	I:4	DEFREQ		182A
3-00000000	I:4	PVT		182A
3-00000000	I:4	SAVE		182A
3-00000088	I:4	IRATE		182A
2-00000028	I:4	JARG		182A
2-00000028	I:4	JARG		182A
4-00000004	I:4	JDU1		182A
4-00000004	I:4	JDU1		182A
3-00000004	I:4	JPV1		182A
3-00000058	I:4	K32		182A
3-00000008	I:4	KVSTAR		182A
8-00000004	I:4	KVSTAR		182A
8-00000028	I:4	KVSTAR		182A

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OUTSPC

3-000000A4	1.4	LASTCK	COMM	153	157	34
4-0000003C	1.4	LEAKE	COMM			33
5-00000000	1.4	LEVEL	COMM			42
3-00000000	1.4	LIMINV	COMM			34
8-00000020	1.4	LINLEN	COMM			57
5-00000014	1.4	LGTH	COMM			57
5-00000010	1.4	LOGSN	COMM			57
5-00000004	1.4	LOGR	COMM			57
8-0000003C	1.4	LOUT	COMM	165		57
7-00000000	1.4	PLIM	COMM			53
7-00000000	1.4	STAL	COMM	183	216	53
AP-00000004*	1.4	STERM	COMM	185(2)		57
8-00000024	1.4	TRACE	COMM	197	173	33
3-0000005C	1.4	M3	COMM	211		33
3-000000AC	1.4	MAXIT	COMM			34
3-00000040	1.4	MAXMUL	COMM			33
3-00000038	1.4	MOLIT	COMM			31
3-00000090	1.4	MINOUT	COMM			34
3-00000010	1.4	MINP	COMM			30
3-00000034	1.4	MURIT	COMM	113	191	36
11-00000000	1.4	MODEL	COMM			31
7-00000008	1.4	MPSNAM	COMM			33
3-00000054	1.4	MRO	COMM			32
3-00000014	1.4	MROW	COMM			30
3-000000BC	1.4	MXCOLS	COMM			35
3-000000C0	1.4	MXELS	COMM			35
3-000000C4	1.4	MXINTS	COMM	156	157	35
3-00000008	1.4	MXROW	COMM	180		30
3-00000004	1.4	NATTRS	COMM	113		36
13-00000094	1.4	NC	COMM			34
7-00000004	1.4	NCOL	COMM			33
8-0000000C	1.4	NCPIVAR	COMM			37
3-00000020	1.4	NEGATE	COMM			30
3-000000A8	1.4	NEGRO	COMM			34
8-00000018	1.4	NEXTBL	COMM			37
3-00000018	1.4	NINIT	COMM	135D		30
3-00000084	1.4	NO	COMM			13
3-000000E8	1.4	NOOUT	COMM			48
6-00000000	1.4	NORONM	COMM			48
11-00000004	1.4	NPROVS	COMM	113	197	56
3-00000098	1.4	NSKIP	COMM			34
3-000000A0	1.4	NTF	COMM			34
3-0000009C	1.4	NTI	COMM			36
3-000000D4	1.4	NRNEG	COMM			36
9-00000000	1.4	NULL	COMM	139=	197=	60
3-0000008C	1.4	NUM	COMM			135
3-0000001C	1.4	NUSED	COMM			134
10-00000000	1.4	NUVOTR	COMM			130
3-00000044	1.4	OBJ	COMM	129	162=	57
3-0000007C	1.4	ONEDEL	COMM			33
3-00000068	1.4	ONEPLS	COMM			33
3-00000060	1.4	PMIX	COMM			32
2-00000038	1.4	PRIMAR	COMM			214A
3-000000E0	1.4	PRMAT	COMM			113
3-00000050	1.4	PSTORE	COMM			129
3-00000050	1.4	PURE	COMM			32

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OUTSPC

3-000000008	R:4	REDCSI	COMM	360000000	157(2)=	162	163	165	182A
3-000000000	R:4	SAUPV	COMM	135000000					
3-000000020	R:4	SUMAT	COMM	135000000					
3-0000000E4	R:4	UNSAT	COMM	135000000					
3-000000000	R:4	W	COMM	135000000					
3-00000002C	R:4	YES	COMM	135000000					
3-00000000C	R:4	ZINR	COMM	135000000					
3-00000000C	R:4	ZVAL	COMM	30					

ARRAYS

Address	Type	Name	Attributes	Bytes	Dimensions	References
7-000015000	R:4	AHAT	COMM	104000	(26000)	53
7-000015000	R:4	ALPHA	COMM	4000	(100)	53
7-000015000	R:4	BHAT	COMM	4000	(100)	53
7-000015000	R:4	BOUND	COMM	4000	(100)	53
7-000015000	R:4	POSTION	COMM	3920	(980)	80
7-000015000	R:4	FEZTUP	COMM	3920	(980)	80
7-000015000	R:4	FEZTUP	COMM	3920	(980)	80
7-000015000	R:4	INDEX	COMM	3920	(980)	80
7-000015000	R:4	INFOLI	COMM	960	(240)	53
7-000015000	R:4	INFOLI	COMM	960	(240)	53
7-000015000	R:4	ISROW	COMM	104000	(26000)	53
7-000015000	R:4	JBASIC	COMM	16000	(4000)	53
7-000015000	R:4	JCOLFR	COMM	3920	(980)	80
7-000015000	R:4	JVALFW	COMM	144	(36)	80
7-000015000	R:4	LINDUW	COMM	328	(82)	80
7-000015000	R:4	LINSPLS	COMM	8000	(4000)	80
7-000015000	R:4	NOWIN	COMM	4400	(1100)	80
7-000015000	R:4	NZLIST	COMM	8800	(2200)	80
7-000015000	R:4	SPACE	COMM	16	(4)	80
7-000015000	R:4	SUB	COMM	16000	(4000)	80
7-000015000	R:4	VARNAM	COMM	32000	(8000)	80

LABELS

Address	Label	References
9-0000000F5	3	192
9-000000004	4	196
9-0000000F5	101	205
9-0000000E2	250	183
9-0000000F9	310	207
9-000000136	380	219
9-00000013A	399	219
9-000000000	400	219
9-000000000	410	219
9-000000000	501	219

FUNCTIONS AND SUBROUTINES REFERENCED

Type	Name	References
GETPRC	170	
GETPRC	184	
GETPRC	183	
GETPRC	183	

OUTSPC

REPROW
REPVAR

214
182

KEY TO REFERENCE FLAGS	
-	Value Modified
A	Defining Reference
B	Actual Argument possibly modified
D	Data Initialization
(n)	Number of occurrences on line

COMMAND QUALIFIERS

FORT/LIST/CROSS AUUSER12

/CHECK=(NOBOUNDS,OVERFLOW,NOUNDERFLOW)
/DEBUG=(NOSYMBOLS,TRACEBACK)
/STANDARD=(NOSYN,AX,NOSOURCE,FORM)
/SHOW=(NOPREPROCESSOR,NOINCLUDE,MAP,MODIFICATIONARY,SINGLE)
/WARNINGS=(GENERAL,NODECLARATIONS)
/CONTINUATIONS=19 /CROSS REFERENCE /MOD LINES /NOEXTEND_SOURCE /F77
/NOG_FLOATING /14 /NOMACHINE /OPTIMIZE

COMPILATION STATISTICS

Run Time: 95.43 seconds
Elapsed Time: 357.15 seconds
Page Faults: 7231
Dynamic Memory: 1544 pages

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END OF LIST

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REFERENCES

- [1] Ojdana, E. S. Jr. and J. P. Weyant, "An Assessment of Selected Models Used for Evaluating Military RED Projects," USAF Project RAND, R-1847-PR, Sept., 1976, Rand Corp., Santa Monica, CA. 90406, 78 p.
- [2] Keeney, R. L. and H. Raiffa, Decisions with Multiple Objectives: Preferences and Value Tradeoffs, Wiley and Sons, Inc., N.Y., N.Y., 1976.
- [3] White, Charles R., "Project Ranking," USAF TR F08635-82-K-0312, Volume I, Engineering Experiment Station, Auburn University, October, 1984, 171p.
- [4] von Neumann, J. and O. Morgenstern, Theory of Games and Economic Behavior, Princeton University Press, Princeton, New Jersey (second edition), 1947.
- [5] Savage, L. J., The Foundations of Statistics, Wiley and Sons, Inc., New York, New York, 1954.
- [6] Schlaifer, R. O., Probability and Statistics for Business Decisions, McGraw-Hill, New York, New York, 1959.
- [7] Raiffa, H. and R. O. Schlaifer, Applied Statistical Decision Theory, Harvard Business School, Division of Research, Boston, Mass., 1961.
- [8] Pratt, J. W., et al., Introduction to Statistical Decision Theory, McGraw-Hill, New York, New York, 1965.
- [9] Pratt, J. W., "Risk Aversion in the Small and in the Large," Econometrica, Vol. 32, 1964.
- [10] Novick, M. R., and D. V. Lindley, "Fixed-State Assessment of Utility Functions," Journal of the American Statistical Association, Vol. 74, 1979.
- [11] Winkler, R. L., "The Quantification of Judgment: Some Methodological Suggestions," Journal of the American Statistical Association, Vol. 62, 1967.
- [12] Edwards, W., "Conservatism in Human Information Processing," in Formal Representations of Human Judgment, B. Kleinmuntz, editor, Wiley and Sons, Inc., New York, New York, 1968.

- [13] Schlaifer, R. O., Analysis of Decisions Under Uncertainty, McGraw-Hill, New York, New York, 1969.
- [14] Tversky, A. and D. Kahneman, Judgment Under Uncertainty: Heuristics and Biases, The Hebrew University, Jerusalem, Israel, 1973.
- [15] Arrow, K. J., Social Choice and Individual Values, Wiley and Sons, Inc., New York, New York, 1963, Second Edition.
- [16] Keeney, R. L. and C. W. Kirkwood, "Group Decision Making Using Cardinal Social Welfare Functions," Management Science, Vol. 22, 1975.
- [17] Fishburn, P. C., Decision and Value Theory, Wiley and Sons, Inc., New York, New York, 1964.
- [18] Fishburn, P. C., "Independence in Utility Theory with Whole Product Sets," Operations Research, Vol. 13, 1965.
- [19] Fishburn, P. C., "Markovian Dependence in Utility Theory with Whole Product Sets," Operations Research, Vol. 13, 1965.
- [20] Pollak, R. A., "Additive von Neumann-Morgenstern Utility Functions," Econometrica, Vol. 35, 1967.
- [21] Raiffa, H., Preferences for Multi-attributed Alternatives, RM-5868-DOT/RC, The Rand Corporation, Santa Monica, California, 1969.
- [22] Keeney, R. L., "Quasi-Separable Utility Functions," Naval Research Logistics Quarterly, Vol. 15, 1968.
- [23] Keeney, R. L., "Utility Independence and Preferences for Multiattributed Consequences," Operations Research, Vol. 19, 1971.
- [24] Fishburn, P. C., "Additive Representations of Real-Valued Functions on Subsets of Product Sets," Journal of Mathematical Psychology, Vol. 8, 1971.
- [25] Fishburn, P. C., "Bernoullian Utilities for Multiple Factor Situations," in Multiple Criteria Decision Making, J. L. Cochrane and M. Zeleny, editors, University of South Carolina Press, Columbia, South Carolina, 1973.
- [26] Fishburn, P. C., "von Neumann-Morgenstern Utility Functions on Two Attributes," Operations Research, Vol. 22, 1974.

- [27] Farquhar, P. H., "A Fractional Hypercube Decomposition Theorem for Multiattribute Utility Functions," Operations Research, Vol. 23, No. 5, 1975.
- [28] Keeney, R. L., "Multiplicative Utility Functions," Operations Research, Vol. 22, 1974.
- [29] de Neufville, R. and R. L. Keeney, "Use of Decision Analysis in Airport Development for Mexico City," in Analysis of Public Systems, A. W. Drake, et al., editors, M.I.T. Press, Cambridge, Mass., 1972.
- [30] Bell, D. E., "Consistent Assessment Procedures Using Conditional Utility Functions," Operations Research, Vol. 27, No. 5, 1979.
- [31] Saaty, Thomas L., The Analytic Hierarchy Process, McGraw-Hill, New York, New York, 1980.
- [32] Winkler, Robert L., "Research Directions in Decision Making under Uncertainty," Decision Sciences, Vol. 13, No. 4, October, 1982.
- [33] Ignizio, James P., "On the (Re)Discovery of Fuzzy Goal Programming," Decision Sciences, Vol. 13, No. 2 April, 1982.
- [34] Soutar, Geoffrey, and Alvaro F. Ascui, "Analyzing Preferences for Investment Projects: A multidimensional Scaling Approach," Decision Sciences, Vol. 11, No. 3, July, 1980.
- [35] Klein, Gary, Herbert Moskowitz, Sathiadev Mahesh, and A. Ravindran, "Assessment of Multiattributed Measurable Value and Utility Functions via Mathematical Programming," Decision Sciences, Vol. 16, No. 3, Summer, 1985.
- [36] Bernardo, John J. and David E. Upton, "A Stochastic Multiattribute Heuristic Model of Investor Choice," Decision Sciences, Vol. 11, No. 3, July, 1980.
- [37] Barron, F. Hutton, "Empirical Validation of Elicited Utilities for Prediction and Decision Making," Decision Sciences, Vol. 11, No. 3, July, 1980.
- [38] Zahedi, Fatemeh, "Data-base Management System Evaluation and Selection Decisions," Decision Sciences, Vol. 16, Num. 1, Winter, 1985, pp. 91-116.

- [39] Hannon, Edward L., Joseph A. Smith, and Ronald G. Gilbert, A Multiattribute Decision-Making Approach to the Selection of Auxiliary Device for Icebreakers," Decision Sciences, Vol. 14, No. 2, April, 1983.
- [40] O'Grady, P. J. and U. Menon, "A Multiple Criteria Approach for Production Planning of Automated Manufacturing," Engineering Optimization, Vol. 8, 1985, pp. 161-175.
- [41] Horsky, Dan and M. R. Rao, "Estimation of Attribute Weights from Preference Comparisons," Management Science, Vol. 30, No. 7, July, 1984, pp. 801-822.